The Changing Role of the CBD within the Metropolitan Retail Structure of Hobart

by

T.D. COURTNEY B.A.

submitted in fulfilment of the requirements for the degree of

Master of Arts

UNIVERSITY OF TASMANIA

HOBART

March 1975

Except as stated herein, this thesis contains no material which has been accepted for the award of any other degree or diploma in any university. To the best of my knowledge and belief this thesis contains no copy or paraphrase of material previously published or written by another person, except when due reference is made in the text.

Signed T. D. Courtney.....

T.D. COURTNEY

ACKNOWLEDGEMENTS

I should like to acknowledge my debt to my supervisor, Professor Scott, for the assistance given in the preparation of this thesis. I should also like to acknowledge the help given by the Deputy Commonwealth Statistician and wish to thank him, in particular, for permission to include in this thesis, two maps, Figures 1.2 and 1.5, from Economic Censuses : Retail and Selected Service Establishments - Part 2 - Industry and Commodity Details for Statistical Retail Areas - Tasmania 1968 - 69. I am indebted to the many geography students of the Tasmanian College of Advanced Education who, in the course of their studies, have contributed to my understanding of the changing role of the CBD in the metropolitan retail structure of Hobart.

Finally, I should like to thank my wife, Joan, for her support and encouragement over the years. Without these it is doubtful whether this thesis would have been completed.

T. D. COURTNEY.

29th March, 1975.

TABLE OF CONTENTS

Table of Contents

Table of Contents

LIST OF TABLES

List of Tables

List of Tables

List of Tables

List of Tables

List of Tables

List of Tables

LIST OF FIGURES

List of Figures

List of Figures

List of Figures

ABSTRACT

The role of the central business district of cities throughout the western world is changing in response to a wide range of influences. Demographic changes, particularly urban population growth and distribution, growth in real income, and growth in consumer mobility are among the most important of these influences. In the past two decades not only has city growth led to an ever increasing proportion of consumers living further from the central business district and therefore visiting it less frequently, but public transport, at one time a major centralizing force, has been neglected by consumers in favour of the private car. Inner city parking facilities have fallen far short of demand, and freeway development, which initially encouraged centralized traffic flow, has aggravated inner city congestion, so that the CBD has become less accessible to the motorized consumer who has sought to satisfy his demands in suburban locations. Technological advances in the fields of communications, consumer credit, refrigeration, mass production, and improving retail technology have tended to favour suburban retailing, and under the impact of the supermarket, the planned shopping centre, and the freestanding discount department store the CBD's importance has declined, and it has concentrated increasingly upon the sale of high order goods for which it is best suited. This study examines the changing role of the CBD within the metropolitan retail structure of Hobart and seeks to explain the spatial distribution and interrelationships of retailing in terms of central place theory, using statistical techniques of analysis where appropriate. It demonstrates the fact that the fundamental commercial structure of Hobart conforms remarkably with the spatial organization of the cities of the western world where similar forces are at work. It shows that the process of retail decentralization may be regarded as a natural consequence of city growth and that

Hobart CBD, which continues to play an over-dominant role in the metropolitan retail system, can be expected to decline in importance before a steady state is reached.

C H A P T E R I

INTRODUCTION

I.1. Background to the Present Study

There is ample evidence that the role of the central business district (CBD) of cities throughout the western world is changing in response to a wide range of influences and that by and large its significance, measured in terms of retail sales, is declining relative to metropolitan population size and over time. This study attempts to identify the nature and extent of changes that have taken place in the retail structure of metropolitan Hobart since the mid-1950's, to describe and account for trends that have led to recent changes in the role of the CBD, and to suggest changes that are likely to occur in the near future as the retail system undergoes compensatory adjustments resulting from changes in the retail environment. Many of these changes reflect forces which have been experienced, to a greater or lesser extent, in the cities of western Europe, United States and mainland Australia since World War II. It is appropriate, therefore, that we should start by examining trends in these regions and that, from time to time throughout this study, we should compare trends in Hobart with those in cities overseas and in other Australian states.

Trends in Western Europe and the United States

In western Europe the retail systems of major cities have been subjected to forces which have led to decentralization of lower order retail functions, such as everyday convenience goods, and increasing specialization in high order durable or specialty goods. In France, Corniere's (1967, 7) analysis of

five major cities led him to claim that as a town spreads out, the share of retail trade in the centre is inversely proportional to the size of the town population. He found that growth of shopping centres at the outskirts of big French towns attracts trade away from the central shopping district. Similarly, in Germany, Hartenstein and Staak's (1967, 35-52) comparative study of the core areas of six cities led them to conclude that rate of CBD retail growth, as measured by floor area for retail use, does not parallel growth of the core area as a whole, but declines relative to other CBD functions. They suggest that this is partly due to the fact that larger cities have decentralized their retail functions to a higher degree and partly to the fact that with growing size the floor area for office use grows at a faster rate because larger cities fulfil a number of regional, national and international functions which smaller cities do not.

In Amsterdam Venekamp and Kruijt (1967, 226-232) found in their study of the structure, spread and development of the retail trade in the inner city between 1956 and 1963 that not only had there been an overall drop in the number of retail establishments, but the decline in the number of shops with a neighbourhood function had been particularly pronounced, due to a decrease of population in the inner city. The most remarkable growth had taken place in textile and clothes shops while department stores in the inner city appeared to be static. Sales of durable goods had increased and the more successful concerns handling these goods were growing bigger and more powerful while marginal establishments were disappearing. From this one might conclude that the inner city was undergoing an evolutionary change leading to intensification of region-wide functions. The factors influencing these structural changes, according to Venekamp and

Kruijt, included increased use of motor transport, rising living standards, increasing consumer demand, tendency towards greater efficiency, movement towards mass distribution, and development of suburban shopping centres.

In the United States since the end of World War II decentralization of retailing from the city centre has been most pronounced. During this period the major part of store construction has taken place in outlying areas. Central business districts of what Nelson (1958, 34) has called middle-sized cities, those with populations of 25 000 to 250 000, suffered severely as new shopping centres, located in the suburbs, intercepted a fraction of the business of the trading area on the way to the CBD. By the mid 1950's, Nelson reports, convenience facilities had already abandoned the central location, so that the most severely affected sections were department stores, clothing stores and hardware stores. The level of decentralization appears to have been directly related to the extent and location of suburban shopping centre construction, with the greatest impact being felt in cities with alternative shopping centres approaching the size and importance of the central shopping district.

By the late 1940's and early 1950's dispersal of retailing from the centre of the largest American cities was already far advanced, and growth of CBD trade was slow compared with metropolitan area trade as a whole. Vance (1962, 491) reports that retail sales in the larger Standard Metropolitan Areas increased by 32.3 percent between 1948 and 1954, during which time the trade of central business districts rose by only 1.6 percent. According to Nelson (1958, 20) the loss in relative importance of the central business district between 1948 and 1954 was accompanied by the tendency, in the largest 35 largest cities, for regional and

local functions to be on the increase, with metropolitan functions declining. Increases in local functions may be explained in terms of the growth in population in the inner city areas resulting from the general tightness of housing of the 1940's and 1950's accompanied by substantial migration from rural to urban areas, which favoured the development of slums surrounding the CBD's (Rothenberg, 1967, 149).

By 1958 absolute amount of CBD retail sales, in constant dollars, in any given United States metropolis had actually dropped compared with 1948 (Boyce and Clark, 1963, 173). CBD sales of convenience goods had registered an absolute decline (Berry, 1963, 29), apparently as the result of increased concentration of lower income families in the older parts of the central city and because of declining numbers of people in the central areas as these were cleared for renewal and for new expressways, civic centres, medical centres and the like. The greatest decline, however, was in those sections serving the metropolitan population, particularly in the general-merchandise and department store groups, while specialty shops, which require the uniqueness of location of the core to tap the entire metropolitan and regional population, showed the greatest increase in trade. In other words, by the late 1950's the CBD's of leading American cities had lost their dominant position in the sale of convenience and shopping goods and, according to Hoyt (1961), were only supplying specialty goods for the population of the whole metropolitan area.

Trends in Australia

In Australia the central shopping districts of cities are undergoing changes similar to those found in western Europe and the United States. Johnston's (1965, 380-381) analysis of data for the 1956-57 and 1961-62 Censuses of Retail Establishments

and Other Services for the six State Metropolitan Areas and their Inner City Areas shows that, in general, the larger the city the smaller the proportion of retail sales recorded in the central business area; that between 1956-57 and 1961-62 the proportion of the total metropolitan sales in central business areas had decreased by an average of 4.8 percent points, with the larger cities showing a greater decrease than the smaller cities; that although none of the central business areas had experienced an absolute decline in sales each, excepting Hobart, had registered a decline in per capita sales; and that each central business area, except that of Hobart, had experienced a contraction in the range of goods contributing significantly to its total sales.

Johnston concluded that the role of the central business areas of Australian cities was changing in that they were becoming less important in the general urban retail structure and more specialized in the range of goods they were able to sell. The changing role of the central business areas of mainland capitals, he claimed, could be explained very largely in terms of population size and the degree of concentration of this population around the central business areas. As the populations of the metropolitan areas grow and become more dispersed from the centre, people spend less each year in the central business area, and presumably visit it less frequently.

Johnston's findings suggest that between the Census of Retail Establishments and Other Services of 1956-57 and that of 1961-62 Hobart CBD had actually moved against national trends to increase its per capita sales and widen its range of CBD commodities. In other words Hobart was exceptional in that its retail trade had become more centralized, with regard to per capita sales, and its CBD had become less specialized. Johnston points out that

although boundaries of the Inner City Area had not changed, there had been significant variations in the boundaries of the metropolitan area of Hobart so that comparative figures for the two dates were not valid. One of the purposes of this study is to attempt to determine whether, in fact, Hobart is exceptional or whether it has followed the trends identified in western Europe, the United States and on the mainland of Australia.

I.2. Conceptual Framework for Handling the Thesis

In executing this study two concepts have proved particularly valuable. Trends in the CBD can best be understood with reference to the concepts of 'equilibrium' and 'equifinality'. The concept of equilibrium will be discussed first.

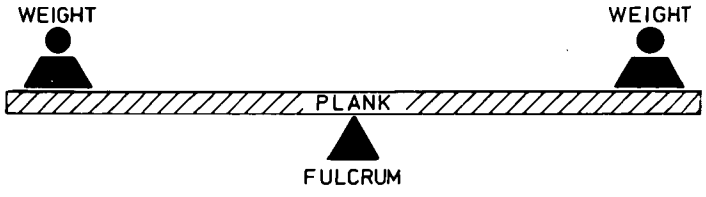
The Concept of Equilibrium

The concept of 'equilibrium', as developed by Losch (1954, 92) Vance (1962, 498) and Berry (1963, 161), is particularly helpful in understanding trends affecting the role of the CBD. This is a state of balance between system and environment, and between components within both system and environment. The urban retail system, analysed thoroughly for the city of Chicago by Berry (1963 and 1965), is an entity comprising a set of specialized, interdependent elements including consumers, establishments, business centres, market areas and the like, in which changes in the quality of one element will bring about changes in other elements. This system represents the supply side of the retail market, the physical form of which is to be seen in the pattern and features of the retail structure (Cohen & Lewis, 1967, 4). The retail environment represents the demand side of the retail market and includes, on the one hand, attributes of the consumer such as numbers, distribution within the city, mobility, purchas-

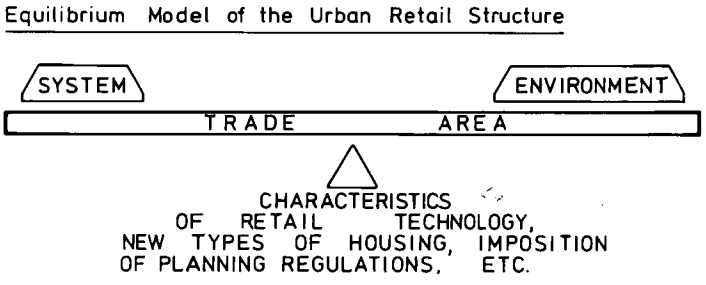
ing power and the like and, on the other, the complex technological and social environment in which the consumer functions. Simple compensatory adjustments of the system and the environment result in what Berry (1963, 170) has called short run changes. For instance, a change in the retail environment, such as the decline in population or purchasing power of the inner city can be expected to bring about a compensatory change in the system, resulting in a proportionate decline in the volume of trade or number of establishments serving that sector of the retail market.

Symbolic Representation of the Equilibrium Concept

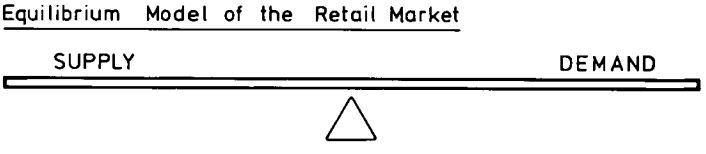
a)



b)



c)



d)

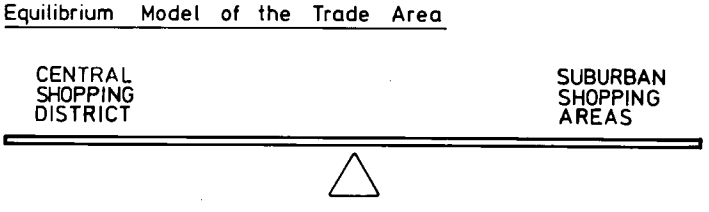


Figure 1.1

In reality compensatory changes are not only initiated by changes in the system and the environment, but also by changes in technology and other shifts such as changes in housing, consumer preferences and mobility on the one hand, and changes in the size and shape of the trade area on the other. These are represented symbolically by fulcrum and length of plank in the equilibrium model shown in figure 1.1. According to Berry (1963, 162) long run changes are those demanded by relocation of fulcrum and plank, that is changes in technology etc. and trade area, and are achieved by compensatory changes in the weights, that is the system and environment. He argues that, although the point of balance is always shifting, there is a 'moving equilibrium' so that, at any point in time, the retail structure of a city may be analysed in detail and will display an approximation to an equilibrium condition, but with variability. Current forms will not balance neatly with demands. Old forms will persist because the necessary time for them to have been eliminated will not yet have elapsed. New forms will be seen predicting future trends. It is this approximation to a state of equilibrium which allows us to examine the urban retail structure, identify the elements and forces involved, and recognize trends.

The Concept of Equifinality

Equifinality, a concept well known to general systems theorists, when applied to urban geography implies that whatever cultural origin cities may have had, when and if they become large they advance toward similar socio-economic structural form (Getis & Getis, 1972, 483). Certainly there appears to be ample evidence of this. Dickinson (1951, 252) observes that when West European cities reach a population of between 50 000 and 100 000 the central business core becomes fully established and a real segregation of

particular functions takes place within it. These processes of consolidation, segregation and specialization within the city centre are accompanied by decentralization of retailing functions, so that, in spite of continued absolute growth, the central shopping district experiences progressively a relative decline in the proportion of the total retail trade of the metropolitan area. Nelson (1958, 13) notes that while the CBD's of smaller American cities, especially those under 100 000, controlled almost all the retail trade before 1920, a gradual change was brought about by increasing car ownership and changes in retailing techniques resulting in the progressive decentralization of retailing. At the same time, he observed, he was able to detect little change in the retailing character of the CBD functions of the largest U.S. cities, although there had been a functional shift in the CBD's area of influence. Much the same conclusion is reached by Blumenfeld (1964, 79) who reports that the number of persons entering the central areas of major American cities remained constant over the past 30 years. He argues that the process of continuous selective adaptation seems to produce stability of quality with congestion acting as the selective agent which maintains the balance.

Australian cities follow very closely the development patterns of the western industrial nations, especially those of the United States, both in the proportion of the total retail sales of the metropolitan area made in the central business areas and in structural form. In general, as Johnston (1965, 380) has pointed out, the larger the city the smaller the proportion of sales recorded in the central business area, the more highly specialized are these sales, and as Scott points out (1959), the more advanced are the processes of segregation and agglomeration of functional units, and the more clearly developed are the zonal structures in

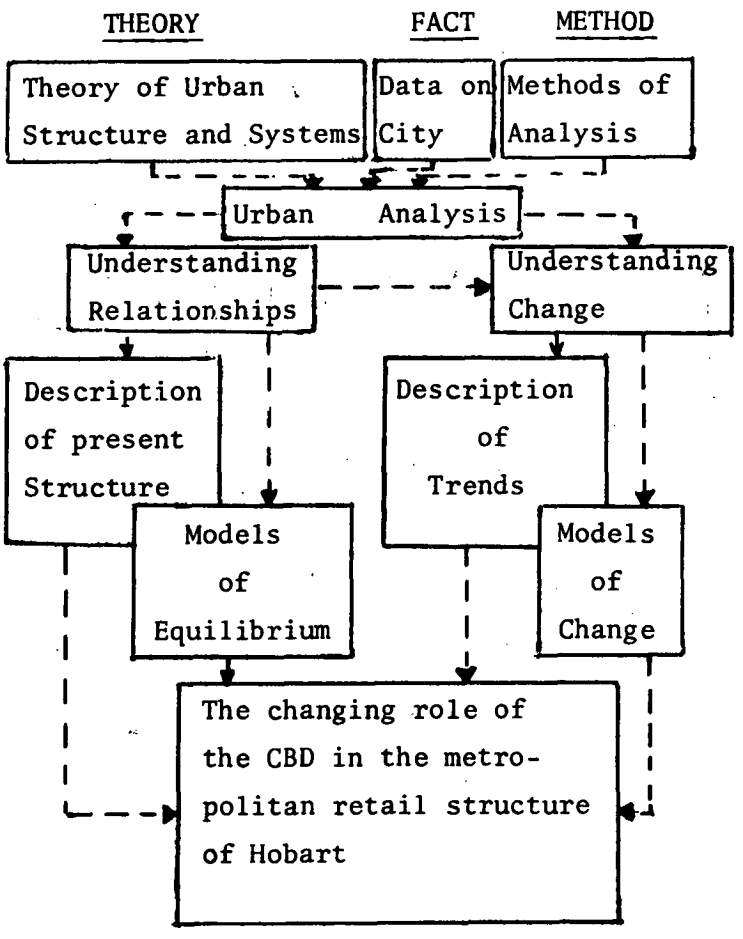
the CBD. It would be reasonable, therefore, to accept the general characteristics of urban development in the industrial western world as a model towards which a medium-sized city such as Hobart could be expected to evolve. It would then be possible to explain marked anomalies in the pattern of development in terms of the peculiarities of the city's history, its physical attributes and the socio-economic forces, past and present, shaping its unique character.

Thesis Structure

For a scientific understanding of the changing role of the CBD in the metropolitan retail structure of Hobart it is necessary to explain the distribution of retailing and the interrelationships between demand and supply factors which determine that distribution in terms of some theory from which it is possible to make rational predictions. Such a theory is to be found in the form of central place theory and this, as it applies to the intra-urban retail system, is outlined in chapter II, The Conceptual Framework. The major components of the urban retail system are (a) the consumer, source of the system's energy and prime determinant of the system's form and structure, (b) the supplier, who responds in a sensitive fashion to the demands of the consumer, and (c) a wide range of other factors affecting both consumer and supplier, by far the most important of which is transport technology. These three components are inextricably bound together but, for the sake of clarity, a separate chapter is devoted to each in turn.

The table below outlines the method of approach to the problems of analysing urban retail structure and structuring the form of the thesis.

TABLE SHOWING URBAN ANALYSIS AND THESIS STRUCTURE



THESIS CHAPTER

I. Introduction

II. The Conceptual Framework

III. Changing Demand Factors

IV. Changing Patterns of Consumer Travel

V. Changing Patterns of Supply

VI. Conclusion

I.3. The Study Area

Today, with a population of roughly 153 000 persons (A.B.S., 1974a, 156) Hobart may be classed as a medium sized city. Compared with its mainland counterparts it is not only by far the smallest state capital, but it also has the slowest growth rate. The present day characteristics of Hobart's central business district, like those of other cities of the western world, are the product of a number of factors including its historical background, the characteristics of its site and situation, the size and shape of the hinterland it serves, its stage of development, within the urban retail system, and the cultural and socio-economic attributes of its people. The contribution of each of these factors needs to be examined in order to understand the changing role of the CBD within the metropolitan retail structure of Hobart.

STATISTICAL RETAIL AREA
HOBART INNER CITY

SCALE

MILES 0 0.1 0.2 0.3 0.4 0.5 MILES

KILOMETRES 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 KILOMETRES

REFERENCE

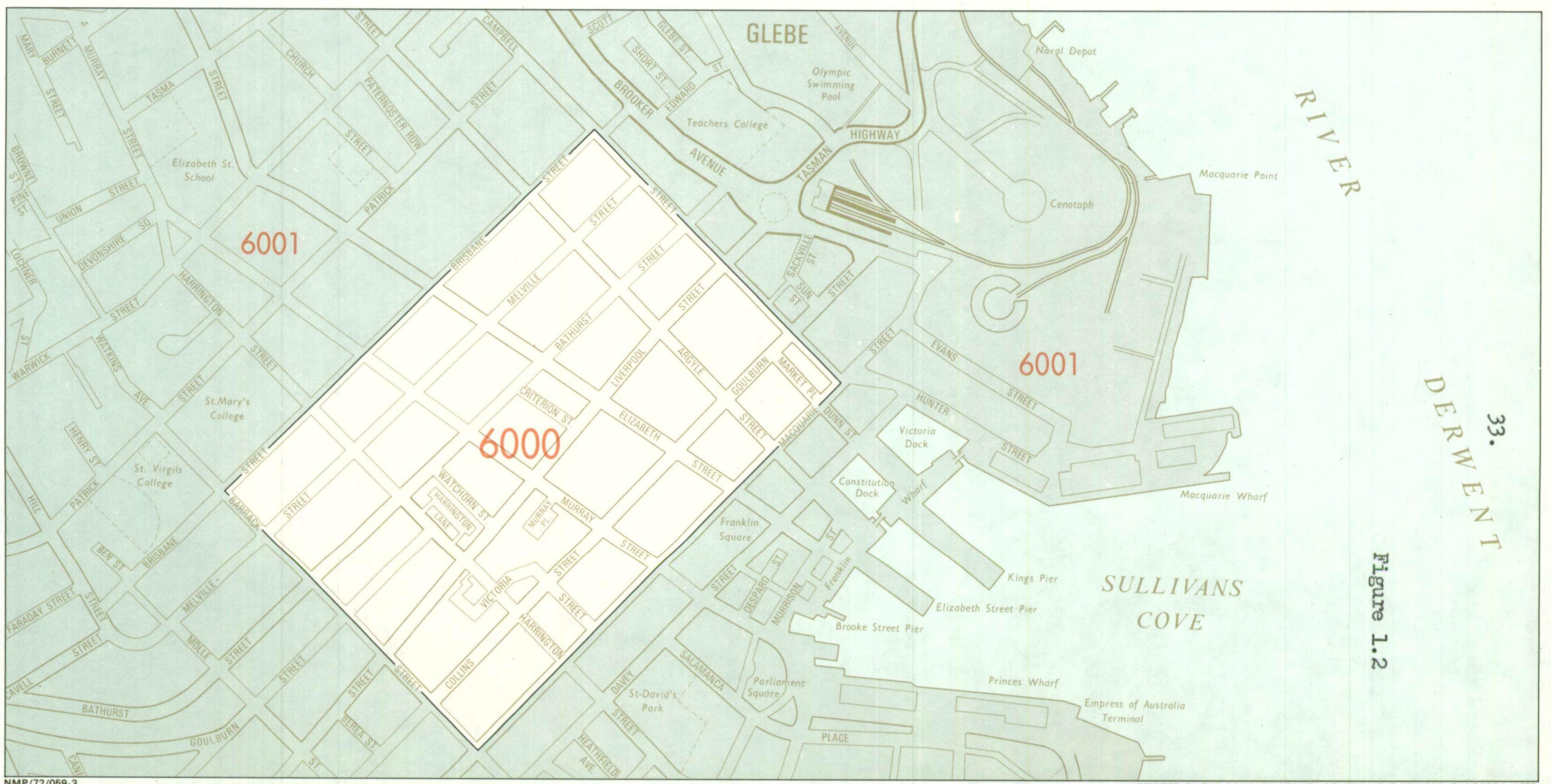
Statistical Retail Areas ---------- 6000

Inner City Area ----------

NOTE: *For the Census of Retail Establishments and Other Services 1968/69, Boundaries are as at 31 December 1968.*

Distributed by the Bureau of Census and Statistics, Canberra.

Prepared for the Bureau of Census and Statistics by The Division of National Mapping, Department of National Development, 1972.



NMP/72/059-3

PRINTED BY THE COMMONWEALTH GOVERNMENT PRINTER, CANBERRA, 1972.

The central business district* of Hobart (Fig. 1.2.) is situated within a few blocks of Sullivans Cove, the site chosen by David Collins for the first permanent European settlement on the island of Tasmania in 1804 (Walker, 1950). This site on the west bank of the Derwent estuary, some twelve miles from the open sea, enjoyed many natural advantages including deep water close to shore, abundant fresh water from the Hobart rivulet, and gently undulating land conducive to settlement at the foot of Mount Wellington. The first tents and huts were erected on the gentle rise between the shoreline and the rivulet, and it was not long before the foreshore was allocated to various government functions, and a route inland established across the rivulet at Wellington Bridge, now beneath Elizabeth Street, not more than a few yards from the present peak land value intersection.

The basic plan of the CBD was determined by Governor Macquarie in 1811 (Macquarie, 1811, 512), when he bestowed upon it the grid pattern so typical of planned nineteenth century colonial settlements. Four streets, named Davey, Macquarie, Collins and Liverpool were to run roughly parallel to the shoreline of

---

* This study is not primarily concerned with the delimitation of the CBD. Attempts to define it (Scott, 1959, and Hobart City Council, 1968) using the Murphy and Vance (1954) technique have produced slightly different results, but it is sufficient to say that the Statistical Retail Area of Hobart Inner City Area (SRA Number 6000) shown in Figure 1.2., taken in this study to be the CBD, includes the entire area defined by Scott (1959) and the central shopping district defined by Hobart City Council.

Sullivan's Cove, and Argyle, Elizabeth, Murray and Harrington Streets were to cross these at right angles. Within this grid evolved the commercial centre, free from the constraints of planning regulation and zoning imposed upon other CBD functions by the 1825 Land Commissioners (Craig, 1944).

By 1827 Hobart was a thriving colonial capital with an export trade in wheat, wool, whale oil, sealskins and hides. It boasted a population of 5000 and a growth rate that compared favourably with that of Sydney. When it was proclaimed a city in 1842 it was the largest whaling port in the British Empire and enjoyed a vigorous commercial life. Surveyor-General James Sprent's (circa 1841) detailed survey of Hobart's streets and buildings undertaken at this time shows that the main axes of building development lay along Elizabeth and Liverpool Streets, the intersection of which could already be regarded as the centre of commerce. A second feature of Hobart's early development was the prevalence of buildings in the interior of the block bounded by Elizabeth Street, Liverpool Street, Murray Street and Collins Street where the Cat and Fiddle Alley gave internal access to what has become the main commercial block in the CBD. Thus we see that the initial attractions of river and harbour combining with historical circumstances and the influence of geographical inertia led early to the establishment of the retailing core in the site it now occupies.

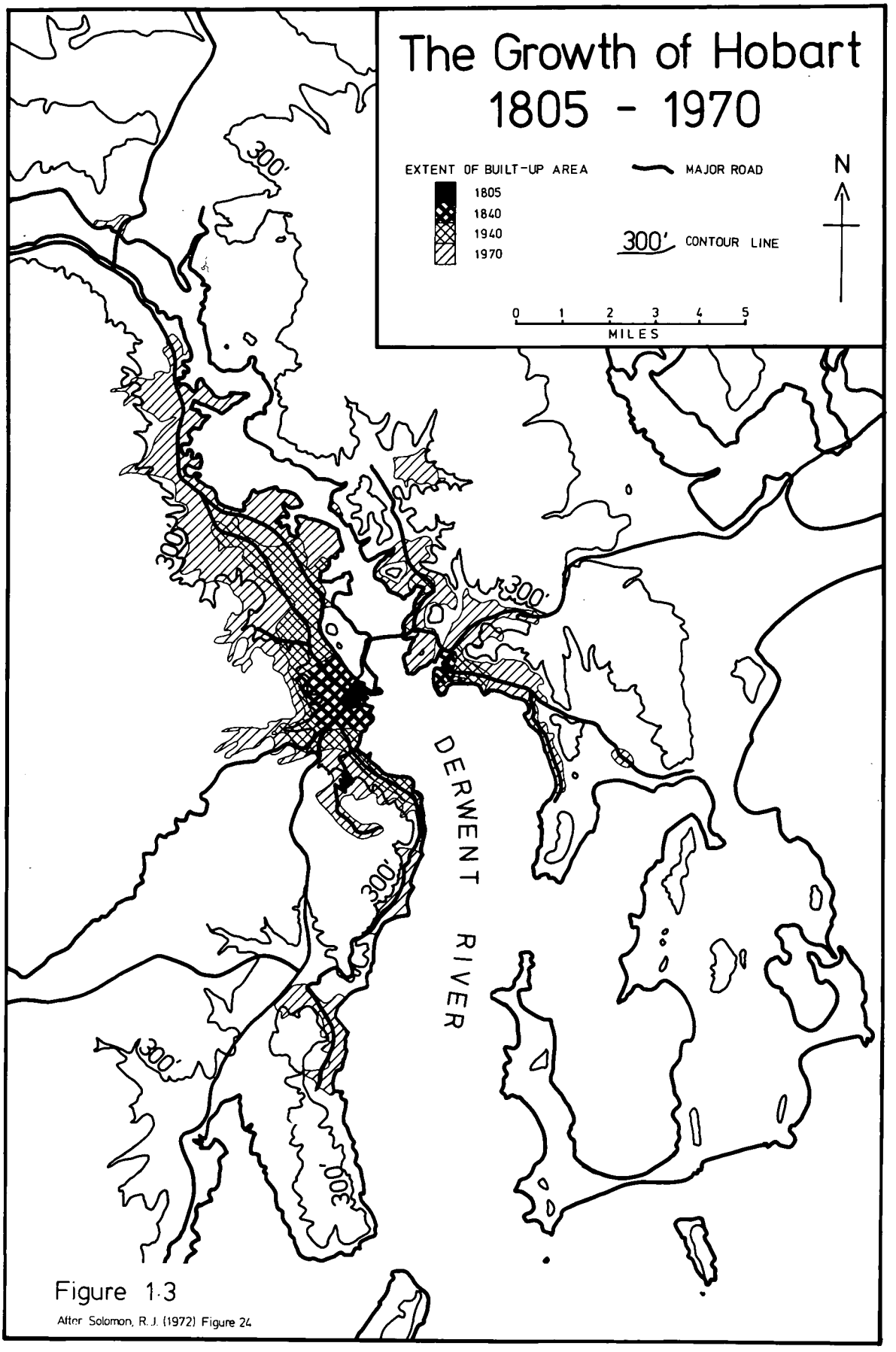


Figure 1.3

After Solomon, R.J. (1972) Figure 24

Beyond the city centre settlement spread northward along the depression between the two main areas of higher relief. To the east lay the dolerite hill of Queen's Domain, reserved as Crown Land and therefore destined to play a negative role as the pattern of settlement evolved, and to the west lay the sandstone and dolerite hill of Knocklofty. To the south settlement spread across the gentle slopes of Battery Point and up the valley of the Hobart Rivulet in a southwesterly direction toward the Cascades in the foothills of Mount Wellington. In fact 'the limits of contiguous settlement in the 1840's encompassed most of the low land having relatively unobstructed surface with the founding site' (Solomon, 1968, 12) (Fig. 1.3). The major transport access routes were Elizabeth Street, leading north, and Macquarie Street, leading west.

By mid-century Hobart Town is said to have challenged Sydney for commercial supremacy in Australia (Scott, 1955, 21), but its isolated location, restricted hinterland, and unsteady economic development led to comparatively slow growth in the next half century (Fig. 1.4) so that by 1900 its population had reached no more than 40 000. By this time the bulk of the settlement had spread northward along the western side of the Derwent graben to New Town and Glenorchy, closely following the river and the mass transit routes provided by the railway and tramway which had been built in 1887 and 1893 respectively (Scott, 1955, 21). A lesser residential area had spread south to Sandy Bay, and Bellerive, on the eastern shore, was by then sparsely settled.

In the early decades of the twentieth century population growth rates continued to be slow in spite of the development of hydro-electric power resources and secondary industries. The only two major industries established in Hobart prior to World War

II, the electrolytic zinc works at Risdon and a cocoa and confectionery factory at Claremont were sited on west bank promontories four miles and eight miles up river from the city centre and these had the effect of accentuating the trend northward, parallel to the River Derwent.

Hobart's Population Growth

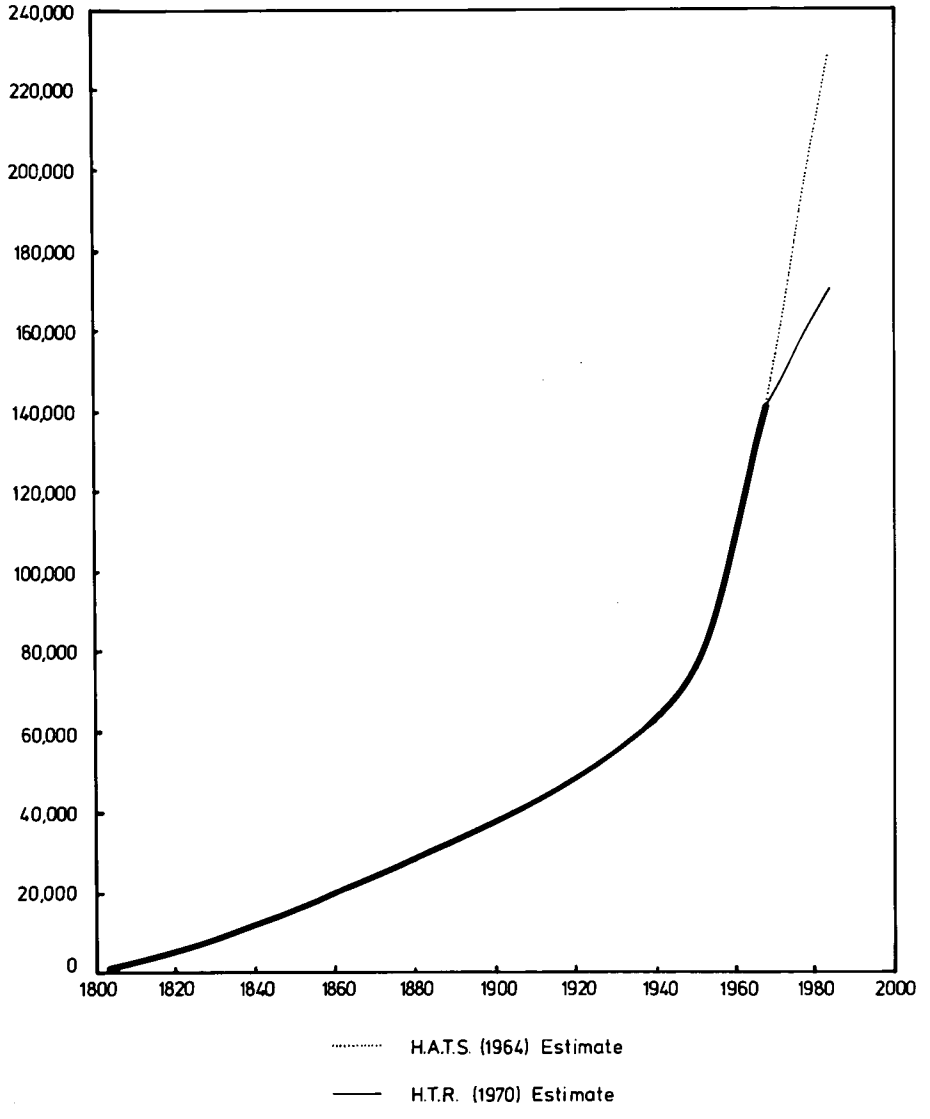
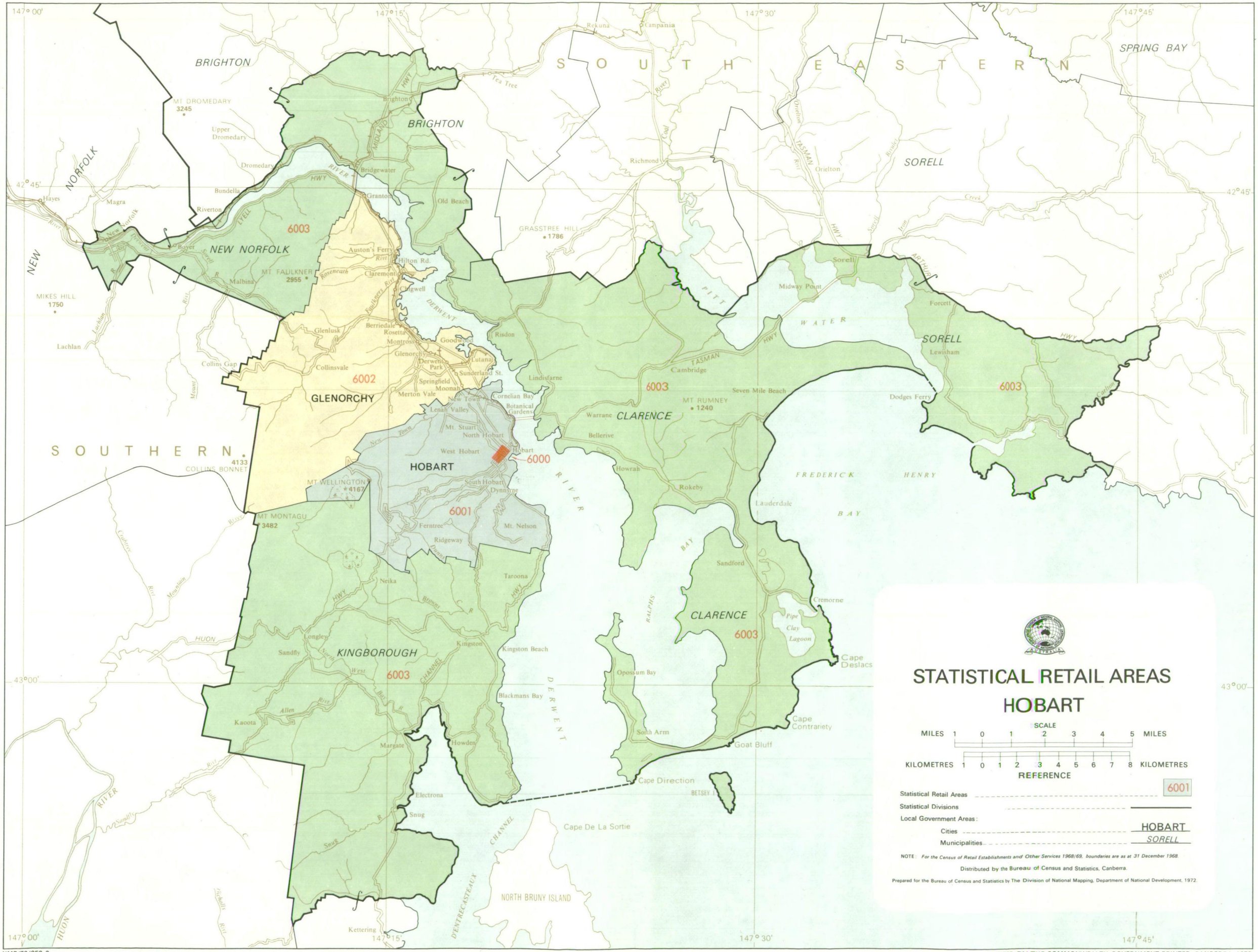


Figure 1·4

Compared with the previous 100 years Hobart's post-war population growth has been dramatic (Fig. 1.4.). In 1947 it had reached just over 76 000, and in the next twenty-five years a further 54 000 made their homes in Hobart. Many came from Britain and Europe in response to the Commonwealth Government's immigration policy (Scott, 1957, 12) while others were attracted from the country by opportunities in the growing manufacturing industries (Scott, 1957, 26). Settlement continued to spread inland along the west bank of the Derwent, selecting first the lower parts of the valley following the main road through Glenorchy and along Brooker Highway and later filling in and climbing the lower slopes of the hills to the west, but seldom going above three hundred feet. Notable exceptions were to be found in the high class residential areas close to the city centre on the slopes of Mt. Stuart and Mt. Nelson. The southward growth was for a long time restricted to a narrow strip of high class residential land stretching from Lower Sandy Bay along Channel Highway to Taroona, but with the opening of the southern outlet freeway to Kingston in 1969 an extensive area of relatively flat land within eight miles of the city centre became accessible, and growth in this direction has been striking.

The Derwent, over a mile in width, for a long time effectively discouraged settlement on the eastern shore. Although the first plans to bridge the Derwent close to Hobart date back to 1832 (Department of Public Works, 1965, 6) it was not until 1943 that the first bridge was completed, this being a floating arch bridge and lift span. This gave access to low land with gentle slopes relatively close to the city centre and growth of population of the eastern shore was so rapid that by 1955 the bridge was unable to carry the number of vehicles required to use it without

extreme congestion (Department of Public Works, 1965, 6). In 1965 it was replaced by a four lane high level viaduct providing clear passage at all times for both shipping and road traffic. Traffic generated by the rapid growth of population on the eastern shore led within five years to plans for a tidal flow arrangement to carry peak-hour traffic to the city centre (Department of Public Works, 1970, 35), and delays in construction of additional river crossings have seriously restricted growth of the city eastward.



STATISTICAL RETAIL AREAS
HOBART

SCALE

MILES 1 0 1 2 3 4 5 MILES

KILOMETRES 1 0 1 2 3 4 5 6 7 8 KILOMETRES

REFERENCE

Statistical Retail Areas ---------- 6001

Statistical Divisions ----------

Local Government Areas:

Cities ---------- HOBART

Municipalities ---------- SORELL

NOTE: *For the Census of Retail Establishments and Other Services 1968/69, boundaries are as at 31 December 1968.*

Distributed by the Bureau of Census and Statistics, Canberra.

Prepared for the Bureau of Census and Statistics by The Division of National Mapping, Department of National Development, 1972.

NMP/72/059-2

PRINTED BY THE COMMONWEALTH GOVERNMENT PRINTER, CANBERRA, 1972.

Urban Hobart* had a population of 129 808 (C.B.C.S., 1973.a, 160) at the time of the 1971 Census and, like other Australian cities, had grown by low-density sprawl so that the most suitable sites for residential development on the west bank of the Derwent had then been occupied. Examination of distribution of built-up areas in the Hobart Metropolitan Area** (Fig. 1.5.) shows that steep slopes present a barrier to development to the west of the city, that inadequate access to the eastern shore has restricted development of suitable residential land in that direction, and that these physical constraints have led to the development of a long narrow city extending eighteen

---

* Urban Hobart includes all contiguous census collectors' districts which have a population density of 500 or more per square mile (A.B.S., 1974.a, 155).

** As Hobart has grown the outer boundary of the city has shifted progressively outwards and, in recent Retail Censuses, three different names have been applied to the metropolitan area. In the 1956-57 Retail Census the term "Metropolitan Area" was used, in the 1961-62 Retail Census the larger area was known as "Hobart and Suburbs", and in the 1968-69 Retail Census the still larger area was called "Hobart Statistical Division" (Fig. 1.5). For the sake of clarity the term metropolitan area (M.A.) is used for the Hobart city region throughout this study.

miles from Bridgewater in the north to Taroona in the south and only six miles from Lenah Valley in the west to Mornington in the east, with isolated settlements to the north and east. As a consequence of the city's longitudinal growth, the CBD now occupies a position far removed from both the geographic centre and the centre of population. In fact, Scott (1959, 292) reports that in no other Australian capital city, except Sydney, is the CBD so far off centre. In 1971 (C.B.C.S., 1973h) 46.21 percent (70 801) of the metropolitan area population lived to the north of the CBD, 25.90 percent (39 679) lived to the south of the CBD, and 27.89 percent (42 736) lived to the east of the CBD across the Derwent.

In the circumstances it is remarkable that the CBD continues to play a dominant role in the life of the city. In 1970 data gathered for a transportation study (Department of Public Works, 1970, 14) showed that, of the entire workforce of the Hobart area, representing 39 percent of the total population, 51.4 percent worked in the CBD, 19.9 percent worked in the west bank suburbs north of the city and the remaining 28.7 percent worked elsewhere (Table 1.1). As a centre of employment the CBD dominated the commercial and service sectors with 66.0 percent and 55.7 percent respectively. It employed 28.4 percent of those engaged in industry, although by far the greatest concentration (43.6 percent) was found in the northern suburbs of Moonah and Glenorchy. What is equally remarkable is the study's prediction that the CBD will continue to dominate as a centre of employment for the next twenty years (Department of Public Works, 1970, 16). In 1990, it is estimated, the CBD will employ 50.5 percent of the workforce, and will continue to

hold 61.4 percent and 56.5 percent of those employed in commerce and service. The percentage engaged in industry is likely to drop to 20.0 percent with the northern suburbs employing 50.3 percent of this category in 1990 (Table 1.1). The continuing dominance of the CBD as a centre of employment has been attributed to Hobart's moderate rate of population growth. This is estimated to be no more than 1.55 percent per annum (Department of Public Works, 1970, 11), a rate that will allow most of the increase in employment to be accommodated within the already established centres.

Table 1.1

Proportion of Hobart metropolitan area employment in the central business district - 1970 and 1990[1]

Employment	% of Hobart employment located in CBD - 1970	% of Hobart employment located in CBD - 1990
Industrial	28.4	20.0
Service	55.7	56.5
Commercial	66.0	61.4
Total % of all employment in CBD	51.4	50.5

(1) Source: Department of Public Works, (1970). "Hobart Transportation Revision 1970", table 2.7, Hobart.

At the hub of the CBD, occupying a central location in relation to the major access routes, lies the central shopping district. Like the rest of the CBD it plays a dominant role in the life of the city and surrounding region. Although it has less than one percent of the population it handles over 40 percent of the retail trade of the metropolitan area (Table 3.8). Of all parts of the city the central shopping district is the most dynamic. Here competition for site is keenest, resulting in a land use system which is highly sensitive to changes in the socio--economic forces shaping the urban environment. Yet, as in Sprent's day one hundred years earlier, the intersection of Elizabeth and Liverpool Streets is still the peak land value intersection and centre of gravity of retail trade, and the block bounded by Elizabeth, Liverpool, Collins and Murray Streets immediately to the south of that intersection was still the dominant shopping block (Fig. 1.2.).

Throughout the history of land valuation in Hobart this block has maintained its dominant role (Solomon, 1968, 503), and since the 1950's its dominance has continued to increase (Free, 1970, 20). Developments in the 1950's included the amalgamation of the Liverpool Street store Brownell's with Johnston and Miller's Murray Street store, the whole becoming part of Myers, Australia's largest single retailer; the absorption of the Elizabeth Street store of Goodwill's into Fitzgeralds Department Store of Collins Street; and the redevelopment of the once congested Cat and Fiddle Alley as an attractive arcade by the hardware wholesaler and retailer Charles Davis. Developments in the 1960's included expansion of the Charles Davis premises and Coles, and the progressive development of what geographer and planning consultant Harold M. Mayer,

of the University of Chicago, has referred to as an unusual and probably unique walk-through circulation from any street frontage to any other (Solomon, 1968, 300).

The extraordinarily high level of internal access, combined with the variety and concentration of retail establishments, has led many Hobart shoppers to regard the central shopping block as a giant unplanned one-stop shopping centre where the customer can satisfy virtually all his needs without having to cross streets or brave the elements. In 1965 the American urban planners and consultants, Wilbur Smith and Associates (Smith, 1965, 33-36) identified this block as 'the principal magnet of retailing and commercial activities' in the CBD. Counts of pedestrians entering and leaving the block from 9.00 a.m. until 6.00 p.m. in October 1964 showed about 48 000 person movements daily, from which it was estimated that about 20 000 individuals visited the block each day. This represented about 35 percent of all persons who visited the CBD during a typical weekday. By 9.00 a.m. about 2200 people had already accumulated in the block and the number of persons increased during the morning at the rate of about 400 per hour until the peak of about 3860 was reached at 1.30 p.m. This represents the large influx of shoppers and people conducting business during lunch hour. A slight decline occurred at 2.30 p.m. and by 4.30 p.m. another peak of about 3750 was reached, representing the influx of after-school shoppers. This was followed by rapid exit of people and by 6.00 p.m. only about 1900 people, mainly workers, remained in the block. Retail stores attracted about 92 percent of all people entering the block, and 70 percent of the block's visitors came to shop (Table 1.2). This compared with 20 percent for business, 9 percent for work and the remaining 1 percent for

'other' purposes. About 83 percent of all visitors stayed in the block for less than half an hour, the average duration of shoppers being 20 minutes. About 37 percent of all visitors arrived by public transport, 33 percent walked, 29.5 percent came by private motor vehicle and only 0.1 percent came by taxi.

Table 1.2

People Visiting Central Block - Hobart CBD - 1964

(Trip Purpose and Mode of Travel)

TRIP PURPOSE	MODE OF TRAVEL (PERCENTAGE OF PEOPLE)					
	Public Transport	Car and Station Wagon	Truck and Utility	Taxi	Walk	TOTAL
SHOP	73.0	68.8	37.4	64.7	67.5	69.4
BUSINESS	15.2	20.8	38.4	24.8	22.9	19.7
WORK	10.0	8.9	23.4	7.8	8.3	9.3
OTHER	1.8	1.5	0.8	2.7	1.3	1.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
Percent of Total	37.0	28.7	0.8	0.1	33.4	100.0

Source: Smith, Wilbur, and Associates, (1965). Parking 1965-1975 City of Hobart, prepared in co-operation with the Hobart City Council, Hobart. Table 22.

In 1968 the main shopping block accounted for an amazing 32.29 percent of floor space used for retailing in the entire CBD (Table 1.3). In the following two years, when decentralizing processes led to loss of 4.25 percent of retail floor space from the CBD as a whole, retail floor space in the main block grew by 6.88 percent, so that by 1970 this block alone accounted for 36.04 percent of all CBD retail space. Furthermore, Table 1.4 shows that within the block itself retailing was growing at a faster rate than other functions so that from 1968 to 1970 the proportion used for retailing rose from 49.9 percent to 51.67 percent of the floor space of the whole block. No doubt if data were available it would be seen that, because of the intense use of space, retail sales within this block would have approached half of all the CBD's sales.

Table 1.3

Retail Floor Space in the CBD and Central Shopping Block

	Retail Floor Space in Square feet		Percentage Change 1968 to 1970
	1968	1970	
Main Block	370,515	396 005	6.88
Total CBD	1.147,491	1 098 685	-4.25
Main Block as a Percentage of CBD	32.29	36.04	

Sources:

1968 data - Hobart City Council,(1968). Table 2

1970 data - Hobart City Council,(1970). Table 3

Table 1.4

Use of Floor Space in the Central Shopping Block - Hobart CBD : 1968 and 1970

	Floor Space in Square Feet		Percentage Change
	1968	1970	1968 to 1970
Retail Space	370 515	395 005	+ 6.88
Total Space	740 546	766 436	+ 1.38
Retail Space as a Percentage of Total Space	49.90	51.67	

Sources:

1968 data - Hobart City Council (1968). Table 2.

1970 data - Hobart City Council (1970). Table 3.

There appear to have been two clearly defined stages in the development of Hobart's central business district. Up to World War II the city's development was dominated by centripetal forces leading to concentration of retailing in the city core. Metropolitan population growth was slow and was located within about three miles of the CBD (Fig. 1.3) where it was served by a public transport system focussed on the city centre. Retailing outside the CBD was confined to a limited number of unplanned shopping centres such as those at Glenorchy, Moonah and Bellerive, where shops were strung out along major access routes to the city, and a scatter of isolated corner stores serving the day to day needs of the neighbourhood.

Since the end of World War II the city has experienced increasingly the centrifugal forces which have led to decentralizing of retailing. As the metropolitan population has grown and spread out and access to the city centre has become increasingly difficult so dispersal of city centre functions has progressively occurred. When outlying sectors have reached critical threshold levels of population and purchasing power they have been able to support lower order centres which have attracted from the CBD convenience and mass-appeal goods, so leaving it increasingly to specialize in the sale of durable and specialty goods to the metropolitan area.

This process of decentralization, common to all cities of the Western world, though cited by some as evidence of the decay and disintegration of the core region, may more properly be regarded as a natural consequence of centripetal and centrifugal forces at work causing the centre to undergo "a process of continuous selective adaptation to those functions for which it is uniquely suited" (Blumenfeld, 1964, 79).

This study is concerned with the process of continuous selective adaptation which is changing the role of the CBD within the metropolitan retail structure of Hobart; consequently it is also concerned with the many factors that are contributing to change. Among the most significant of these have been the growth and redistribution of population, associated with a marked growth in purchasing power and increased mobility. This has resulted in increased traffic congestion and parking difficulties in the city centre, leading in turn to the growth of planned suburban shopping centres and the dispersal of retailing. Other factors include revolutionary changes in merchandising, changing consumer tastes and behaviour, the redevelopment of the inner city, and the imposition of planning restrictions, to name but a few.

I.4. The Data

By virtue of the fact that Hobart is a State capital in a comparatively wealthy nation which can afford to finance consultants' reports, collect statistics, and monitor trends as they occur, there was available for this study a wealth of quantitative data which would not have been available in places of comparable size in many other countries of the world. Of inestimable value were the demographic, economic, and other data published by the Australian Bureau of Statistics and made available through Commonwealth and State Yearbooks, through regular published bulletins and occasional mimeographed field count lists, etc. The Hobart Area Transportation Study of 1964 and the Hobart Transportation Revision 1970, prepared by the American consulting engineers and planners Wilbur Smith and Associates, and Pak-Poy and Associates in association with the Department of Public Works, provided a wealth of information about the travel patterns and

other behavioural attributes of Hobart consumers. The City of Hobart Parking: 1965 - 1975 report prepared by Wilbur Smith and Associates in 1965, this time in cooperation with the Hobart City Council, provided a wide range of information about the Inner City and its parking needs, and the Parking Updating Study of 1971, prepared by the Development Section of the City Engineer's Department provided a valuable commentary on trends predicted in the earlier report. Another valuable source of information about trends in the CBD was provided by the Hobart City Council's Report on Land Use in the CBD in 1967 - 68.

Of lesser official standing, though of considerable assistance in this study, were the reports, indices, and schedules kept by private companies and semi-governmental authorities in Hobart and other parts of Australia. The National Cash Register Company's Index of Shopping Centres, though discontinued in 1971 and incomplete in other respects, gave a clear picture of the trend towards planned suburban shopping centres and their impact upon Australian CBD retail sales. Developers' reports, Metropolitan Transport Trust bus timetables, and news reports in the Mercury and other newspapers filled in gaps and added depth of understanding, as did surveys carried out by students of the Tasmanian College of Advanced Education and the author.

As the list of references shows, the author is indebted to a great many urban geographers in Western Europe, North America and Australia, not only for the data which their theses, papers and texts provided, but also for the techniques they employed in the analysis of that data.

Ideally, any geographical study which attempts to account for the changing role of one city region in relation to the whole city, as the present study does, should define accurately and ob-

jectively both the regions and the units by which change is to be measured.

Data should measure as closely as possible the items defined, and should refer to the same period, and have the same degree of reliability. For instance, such units as "CBD", "metropolitan area", and "retail sales" should be consistent over time for the same place, and comparable in different places at any moment in time. But as Berry (1963, 116), Boyce and Clark (1963, 168) and other researchers in the field of urban geography point out, such ideals are seldom met. In a study such as this, standard sources must be relied on in which data refer to varying times, are available only for different units of observation and have different degrees of reliability. The nearest practical approximations to the desired definitions must be used and therefore, even where perfect correlation between variables is known to exist, inadequacies in data may result in less than perfect correlation coefficients. An understanding of the data difficulties is necessary, therefore, to determine the degree of confidence which can be placed on any given relationship.

Delimiting city regions presents almost insuperable problems. Even where a standardized formula, such as that proposed by Murphy and Vance (1954) for delimiting the CBD, is applied by different people, the subjective element almost invariably leads to different boundaries. If these boundaries are then kept constant over time a further problem arises. As the city grows they will progressively incorporate less of the region that they were designed to delimit. Ideally, in a dynamic city in which form and function are constantly undergoing change new boundaries should be drawn, using the same criteria, each time a census is taken. In the present circumstances this is impractical and this study

accepts the compromise solution in which the CBD, which tends to grow upward rather than outward, is delimited by a fixed boundary enclosing the core area defined by the Australian Bureau of Statistics as the "Inner City Area", and in which the metropolitan area, which is rapidly growing outward, is delimited by what has in the past three Retail Censuses been a shifting boundary delimiting an area known in turn as "Hobart Metropolitan Area", "Hobart and Suburbs" and "Hobart Statistical Division".

The boundary of "Hobart Statistical Division" was drawn for the purpose of presenting the 1966 and subsequent Census results. Its position was fixed with the view to both circumscribing the area in close economic and social contact with the main city, and to enclosing the area of expected urban growth during the following 20 to 30 years (C.B.C.S., 1970 a, 179). It comprises the cities of Hobart and Glenorchy, Clarence municipality and parts of Kingborough, New Norfolk, Brighton and Sorell. For Retail Census purposes Hobart Statistical Division is divided into four Statistical Retail Areas as follows :

SRA NUMBER	LOCAL GOVERNMENT COMPONENTS	STATISTICAL DIVISION
6000	Hobart City - Inner City Area	HOBART
6001	- Remainder	
6002	Glenorchy City	
6003	Clarence Municipality	
	Parts of the Municipalities of	
	Brighton	
	Kingborough	
	New Norfolk	
	Sorell	

These eight local government components are the smallest areal units for which retail data are published so that regional analysis within the metropolitan area, of necessity, has had to be on a broader scale than is desirable.

Comparison of data from census to census was made difficult by virtue of the fact that money value changed over time, and the definition of census units and commodity items also changed. The concept of the 'constant dollar' was used to solve the problem of changing money value, but detailed comparison of data for either establishment type or commodity type was made impossible by changes in definition from one census to the next. For instance, supermarkets were classified separately for the first time in 1968-69, on which occasion grocers and tobacconists were grouped collectively for the first time. In general, the later the census the more detailed the classification but, with the adoption of the Australian Standard Industrial Classification Code (C.B.C.S., 1969) for the 1968-69 census, some stability might be expected in future. At the present rate of change in retailing, however, this could prove a vain hope. The Australian Bureau of Statistics could well include data on planned shopping centres which are already an established part of the economic scene but which are not yet recognized by the Australian Bureau of Statistics as an identifiable economic phenomenon. Nevertheless, in spite of the problems associated with Australian Bureau of Statistics data, it should be stressed that statistical analysis of the changing role of the CBD in the metropolitan retail structure of Hobart would not have been possible without this data.

Much of the data from other sources was collected for some purpose other than that of the present study and their trans-

formation into a form relevant to this study often proved difficult. These difficulties are outlined in the appropriate part of the study.

I.5. Methods of Analysis

This study, concerned as it is with the changing role of the CBD in the metropolitan retail structure of Hobart, attempts to provide a balance between qualitative description on the one hand and quantitative analysis on the other, between theory and fact, models and reality, and between text and illustration.

Examination of the list of tables shows that the study handles a considerable quantity of data, much of which required statistical manipulation to illustrate the complex relationships between components in both the retail system and the retail environment in metropolitan Hobart. Both parametric and non-parametric procedures are employed. For much of the data purely descriptive comparison of similarities and differences between two or more sets of data or regions was adequate, with the use of mean ($\bar{x}$), standard deviation (σ) and percentage difference or percentage change being commonly employed. Location quotients (L_Q) showing relative concentrations in different areas, and constant dollars ($ constant) comparing money values over time were typical of these descriptive techniques.

Other data required the use of inferential explanatory comparisons including product moment correlation coefficient (r) and Spearman rank correlation coefficient (rho), and simple regression analysis for determining the type and strength of a relation between two variables. Confidence levels were set by means of the standard error (S_y), which in turn was used to ascertain the coefficient of determination (r^2) to measure the strength of the

relation. Since the relationship between variables was often non-linear, data had to be reduced to linear form by appropriate transformation. Transformations most commonly used are those based on logarithmic functions.

Theoretic explanatory comparisons are made by Chi--squared (χ^2) test where appropriate.

The students' 't' test (t) was used to test for significance (α) when comparing two data sets to be certain that any differences or similarities between the two sets could not have been by chance. Levels of probability used throughout this study are 0.001 = highly significant, 0.01 = significant and 0.05 = probably significant.

In all cases computation, performed on a HP45 Hewlett Packard calculator, is shown in table form in association with the text. A comprehensive list of mathematical symbols and formulae used is given in Appendix A. Where sources of statistical procedures are not cited in the text the procedure may be found in one of the standard texts on elementary statistical methods such as Chase (1967), Hoel (1960), Huntsberger & Billingsley (1961), Moroney (1951) and Siegel (1965), or in one of the texts on statistical analysis in geography such as Gregory (1963), King (1969), Toyne & Newby (1971), Yeates (1969) and Yeates (1974) all of which contributed to the author's understanding.

An ICI FP-9 analog computer or field plotter, of the kind described by Nunley (1971) which employs an electrically conductive sheet analog to simulate a wide range of physical and human spatial phenomena was used in an attempt to bridge the gap between theory and reality. This was of particular value in mapping and describing, in non-mathematical terms, both interaction and gravity potential models.

Graphic representation of data includes :

(a) the use of graphs such as histograms, frequency polygons, bivariate, compound and logarithmic graphs,

(b) the use of symbol maps such as

  (i) chorochromatic maps, and

  (ii) maps employing areal and proportional symbols, and

(c) line maps such as

  (i) routed flows,

  (ii) non-routed flows, and

  (iii) isoline maps.

CHAPTER II

THE CONCEPTUAL FRAMEWORK AND EMPIRICAL SETTING

II.1. Central Place Theory

For a scientific understanding of the changing role of the CBD in the metropolitan retail structure of Hobart it is necessary to be able to explain the spatial distribution and interrelationships of retailing in terms of some meaningful theory, from which it ought to be possible to predict changes. This chapter briefly describes such a theory, central place theory, provides empirical evidence of the existence of a central place system in Hobart, and shows that the processes of decentralization of lower order retail functions from the CBD and concentration of higher order functions within the CBD may be regarded as natural processes as the system moves towards a steady state.

There is ample evidence to support the thesis that 'the geography of market centres and retail distribution displays regularities over space and through time', and 'that central place theory constitutes the deductive base from which to understand these regularities' (Berry, 1967, vii). Ever since 1933, when Christaller (1966) first published his work on central places in Southern Germany, geographers in advanced countries (Brush, 1953; Brush and Bracey, 1955; Berry, 1967; Illeris, 1967) and less advanced countries (Abiodun, 1967; Skinner, 1964) alike have explained regularities in urban systems in terms of central place theory. In Australia there have been several studies of inter-urban systems (Scott, 1964; Daly & Brown, 1964; Fairbairn, 1968; Smailes, 1969). Recent work has shown the usefulness of the theory in understanding the spatial structure of the urban

retail system (Berry & Garrison, 1958; Berry, 1963; Berry, 1965; Johnston, 1966; Berry, 1967).

All characteristics of central places thus far studied vary exponentially with level of centre in the hierarchy, and attempts to summarize classical central place theory in mathematical form have led to links with general systems theory (Berry, 1967, 75). The urban retail system, like systems in general, is a set of objects (for example, central places which, in the urban setting, may be equated with discrete retail centres), attributes of the objects (trade area, population, establishments, business types, goods sold, traffic generated), interrelations among the objects (uniform size and spacing at any given level), interrelations among the attributes (hierarchical or rank-size), and interdependencies of objects and attributes (the central-place hierarchy).

The urban retail system is an open system in which there is an exchange of energy with the surrounding environment. Energy inputs come from demands of consumers, who constitute the "environment" of the system. Demands are balanced by outputs of the system, the goods supplied to consumers. With relatively constant inputs and approximate balance with outputs, open systems settle into an organized equilibrium between a tendency to move toward maximum entropy (a state in which the energy is dissipated and becomes randomly distributed throughout the system, resulting in the disappearance of the hierarchy) and the need for organization to perform work. Such an organized equilibrium is called a steady state. The central-place hierarchy is a form of organization that performs the work of the retail system as efficiently as possible.

Perfect conformity to the hierarchical system cannot be expected since local disturbing factors such as relief irregularities and minor inbalances between inputs and outputs have a randomizing effect, so that the steady state is reflected in rank--size regularity. If the system is growing and maintains a constant form the rank-size regularity persists through time and exponential relationships will be maintained between the attributes of the centres and levels of the hierarchy. The urban retail system, like other open systems, therefore obeys principles of equifinality so that whatever the initial sizes of the central places, the same steady-state will be achieved provided the energy flows are the same. Increasing energy inputs in an open system cause form adjustments leading to further organization, and any decrease in energy inputs increases entropy resulting in the disappearance of the hierarchy.

Essentially it is form, as explained by function, that enables the geographer to understand the real world. The urban retail system may be regarded as an open regional system (Haggett, 1965, 18) exhibiting the characteristics shown in Figure 2.1 with (a) movement, leading to development of (b) networks, (c) nodes on that network, and their organization as (d) a hierarchy with final integration of the interstitial zones viewed as (e) surfaces.

Characteristics of Nodal Regions

(a) Movement

(b) Networks

(c) Nodes

(d) Hierarchies

(e) Surfaces

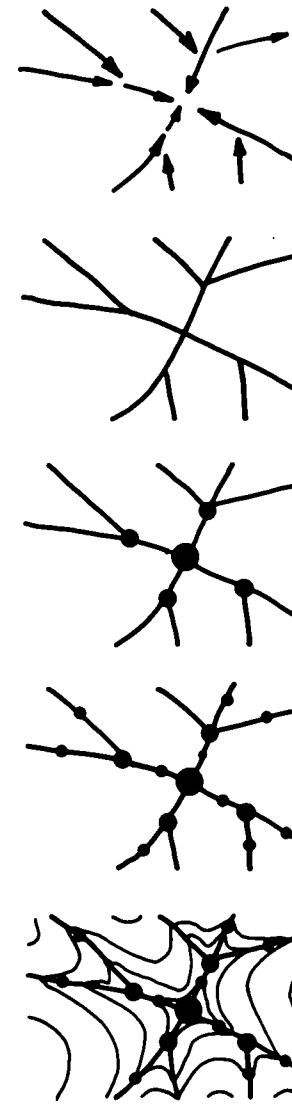
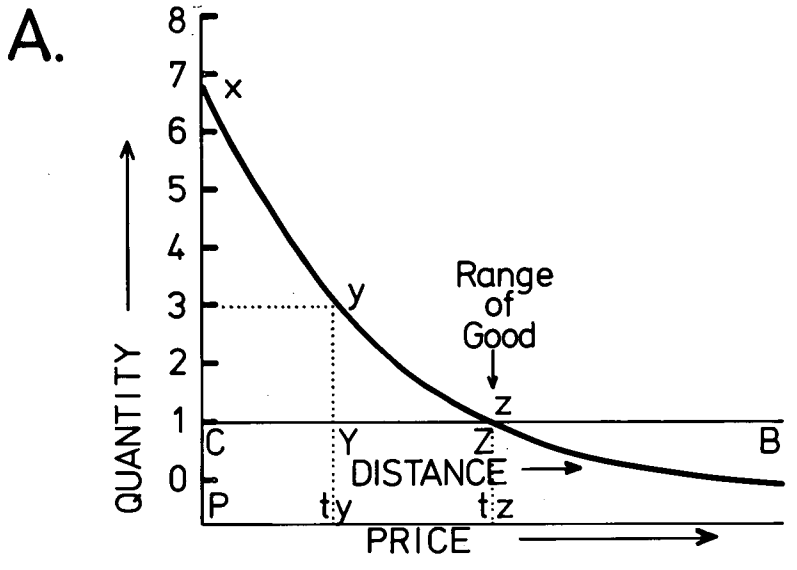


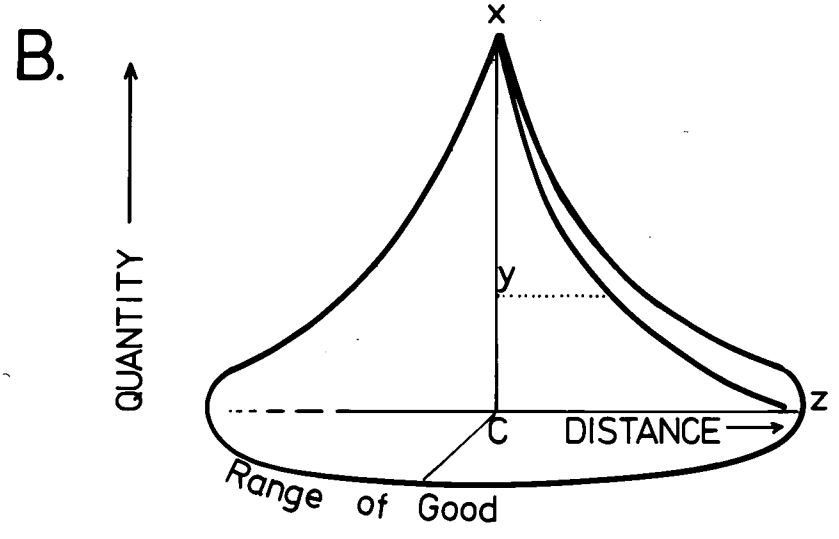
Figure 2·1

Even the simplest of economic systems, such as those just described, are characterized by three basic variables, demand, supply, and price, each of which is affected by distance since there is generally a disparity between places at which a good is demanded and the point of supply. The purchase of goods therefore requires some form of movement which in turn involves expenditure of resources which may be measured in terms of time, money or physical energy. Invariably the cost of overcoming distance is borne by the consumer, either directly or indirectly, and must therefore be added to the cost of the goods purchased. Other things being equal, the quantity of a good that a consumer is prepared to buy depends upon the price of the good, that is, demand is elastic. It follows that, in general, the greater the distance from the point of supply, the higher the price of the good and the smaller the quantity of the good demanded by consumers.

Figure 2.2 illustrates this relationship between the distance of consumers from the point of supply (C) and the quantity they are prepared to buy. The price of one unit of good G at the point of supply, C, is p. Consumers located at C will be prepared to purchase X units of the good. Consumers at Y will have to pay p + ty, that is, the price of the good plus the cost of transport to C to purchase the good. Therefore consumers at Y would be prepared to buy only Y units of good G. At Z the cost of transport tz is so great that consumers located there are prepared to buy only z units of the good, and beyond Z the real price of good G is greater than consumers are prepared to pay for that good. In this case, therefore, Z is the maximum distance over which good G can be sold from point C. This then is the range of good G.



Hypothetical Demand Curve for Good G

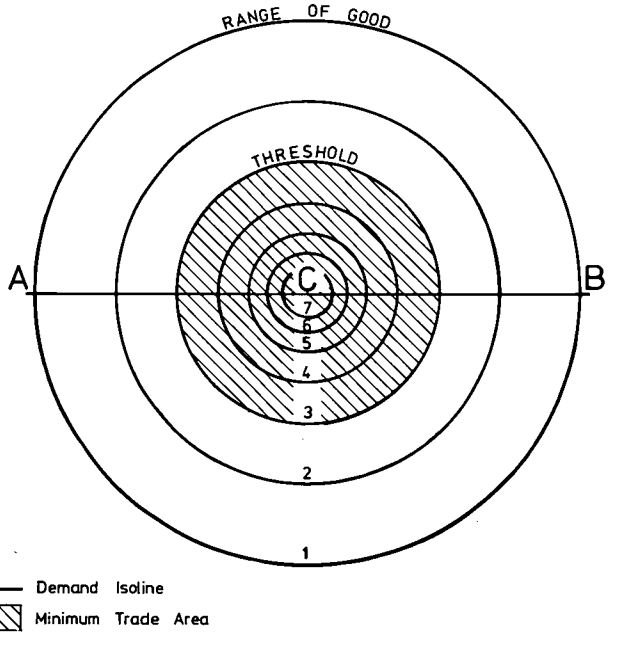


Hypothetical Demand Cone for Good G

Figure 2·2

If we assume our market system consists of a single retailer surrounded by evenly distributed consumers with identical disposable incomes, similar tastes and equal mobility, then spatial variation in demand may be expressed as a hypothetical demand cone by rotating the triangle Czx on Cz as in Figure 2.2.B. It may also be shown by means of an isoline map (Figure 2.3.A.) which would resemble a contour map of a conical hill in the physical landscape. Demand would be greatest at the summit and would decline in all directions away from the point of supply (C). The level of demand is shown by isolines which, in our model, are concentric circles because the real price of the good is related to distance from the point of supply. At distance Z demand will be 1 unit, and beyond this there will be no demand. Isoline 1 therefore represents the range of good G on our demand isoline map.

A. Demand Isoline Map of Good G



B. Demand Isoline Map of two adjacent retailers of Good G located so as to avoid competition

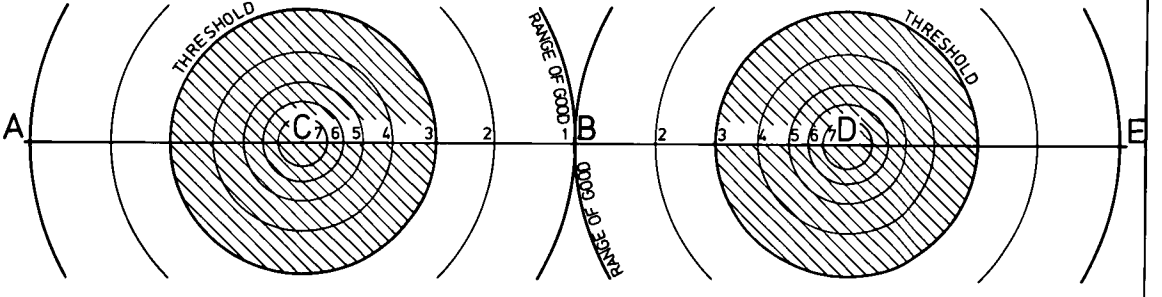


Figure 2·3

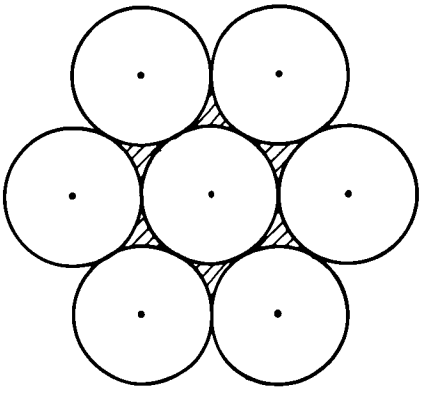
For a retailer to succeed in a location his returns from the sales of goods must cover the cost of the goods and provide a reasonable profit. The threshold, or minimum level of demand to make the supply of a good commercially worthwhile, may also be expressed as a circular isoline centred on the point of supply. Within this circle there must be sufficient demand for the good to satisfy the threshold. If the good is to be supplied and the retailer is to continue in business the range of the good must exceed the threshold. On our isoline map (Figure 2.3.A.) the threshold of the good is represented by the demand isoline 3. Since this is within the range of the good (demand isoline 1), it follows that good G could successfully be supplied from point C.

Our model so far concerns a single retailer of good G but, as we see from our isoline map, parts of our market area lie beyond the range of the good. Furthermore, within the range of good G, but beyond the threshold of good G lies an area where there is a market surplus not necessary to the survival of the retailer at point C. A second retailer of good G therefore can come into existence provided the unfilled demand for the good, as supplied from his location, exceeds the threshold value of good G. Provided that the price of the good is the same at both points of retail and that the cost of transport is the same, then the range of good and the threshold will be the same for each retailer. It follows that the second retailer cannot locate closer to the first than twice the radius of the range of the good without reducing the returns of both retailers. Figure 2.3.B. illustrates a situation in which the market areas, as defined by the range of the good supplied, of two adjacent retailers touch at B so that all consumers along the line ACBDE are able to satisfy their demand for good G. But it is clear that there remain other areas in the market where demand is not satisfied.

Theoretical Spatial Arrangement of Market Areas of Competing Retailers of a Single Good.

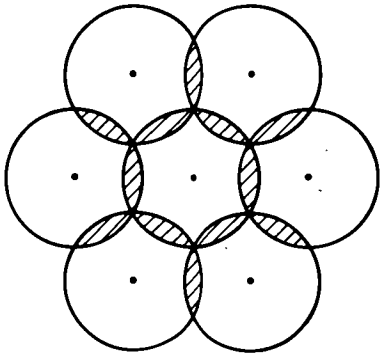
A.

Consumers in interstitial areas are unserved.



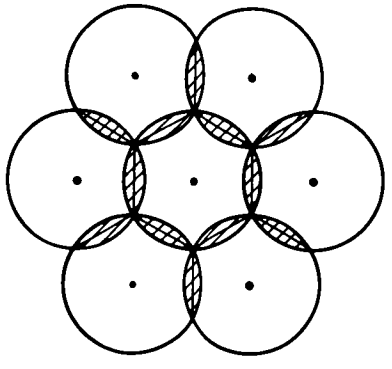
B.

Overlap of circular market areas results in competition between retailers.



C.

Areas of overlap are bisected with consumers purchasing the good from the nearest retailer.



D.

The ideal theoretical shape for market ares: the hexagon.

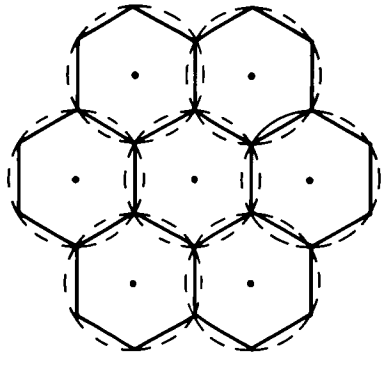


Figure 2·4

So long as demand for good G remains unsatisfied suppliers will continue to enter the market and locate so as to avoid competition. Each will supply a circular market area whose radius is the range of good G. Figure 2.4.A. shows seven retailers arranged in such an order that their trade areas, defined in terms of their range of good, just touch the trade areas of adjacent retailers. But this pattern leaves interstitial zones unsupplied with good G. In order to supply the entire market with good G it is necessary for circular trade areas to overlap (Figure 2.4.B.). This situation creates competition between retailers in the area of overlap. Since the price to the consumer depends solely on his distance from the point of production, it follows that the area of overlap would be bisected (Figure 2.4.C.), with consumers purchasing the good from the nearest retailer. Only those consumers located along the line of bisection would be able to buy the good from two retailers at equal cost. This boundary is therefore known as a line of indifference.

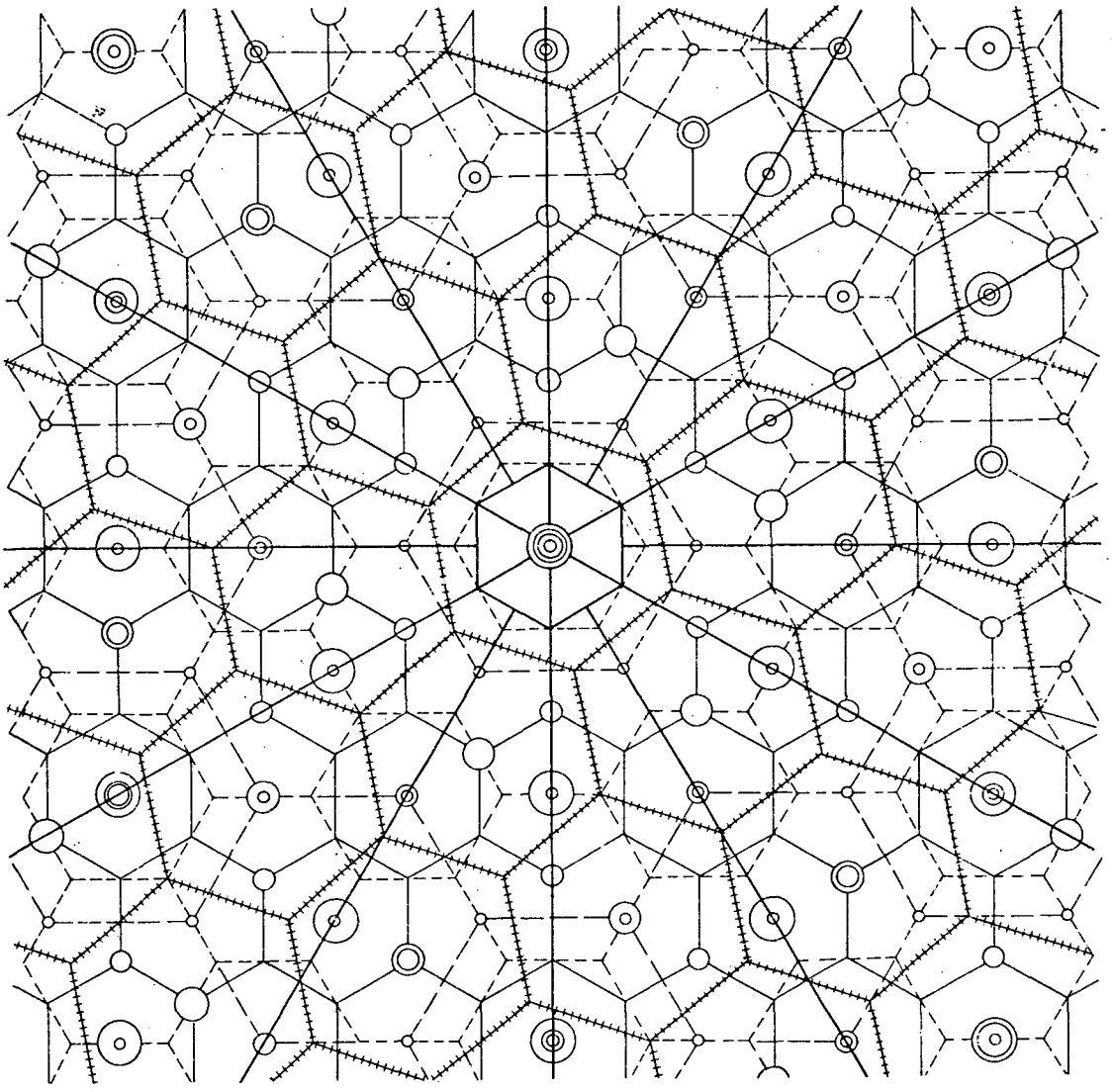
Packing of retailers in this way results in the compression of circular trade areas into hexagonal trade areas. Losch (1939) has proved algebraically that the most efficient division of any large region into trade areas results in regular hexagonal market areas because it allows the maximum amount of packing of market areas consistent with the minimization of movement costs. If the demand of the market is to be supplied as efficiently as possible, both from the point of view of the consumer and the supplier, then the number of retailers of good G will increase and the size of the hexagonal market areas will decrease until the optimum state is reached. The economic market system will then be in a state of equilibrium. Further shrinkage would reduce the sales of individual retailers below the threshold of survival

and, with the elimination of some retailers, the equilibrium of the system will be disturbed. In theory, therefore, we could expect the spatial organization of retailers to be such that they would be uniformly spaced within hexagonal trade areas of identical size, equivalent to the threshold of the good G as in Figure 2.4.D.

In reality, retailers seldom supply one good only but rather a variety of goods. In effect, therefore, a city is served by many different types of shop each with its own threshold. Consumers are not prepared to travel far to satisfy daily needs such as bread, milk and cigarettes. The range for everyday needs is small. If threshold conditions are met within the range, a retailer can locate and thrive at the centre of his market. On the other hand, consumers are prepared to travel considerably greater distances to purchase a piece of jewellery or a fur coat. These goods have a greater range. Since purchases of this kind are made only occasionally, a large population is needed to support such a function. Higher order functions of this kind have a high market threshold and may be able to survive only in the CBD.

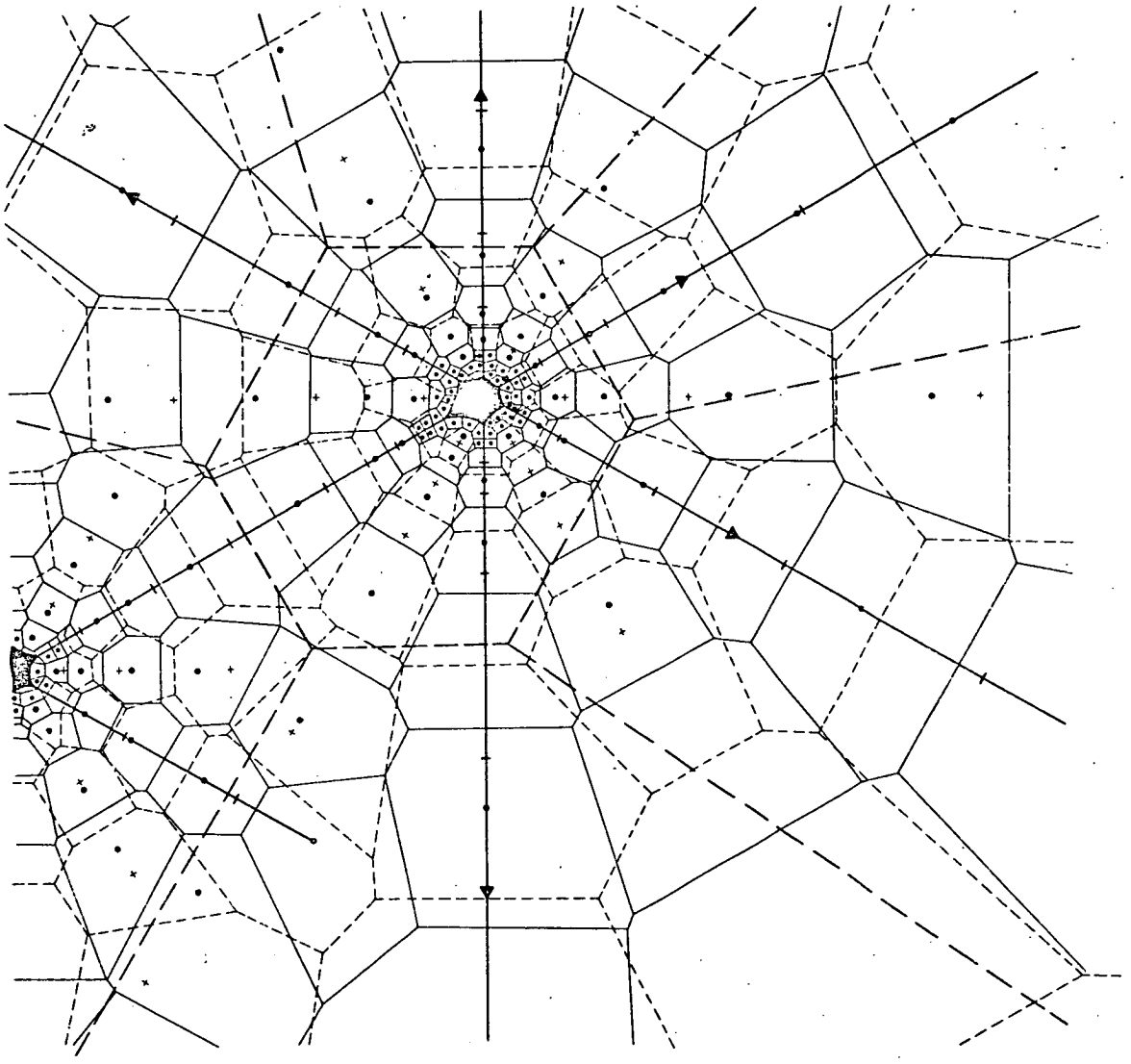
If we follow the Loschian argument we can expect a newly introduced function to select a central location initially, but with city growth and entry of competitors there would be a tendency towards dispersal until ultimately locational equilibrium would be achieved with uniform distribution of shops of that type, each of which would be surrounded by a regular hexagonal trade area the size of which would be determined by the minimum sales volume needed to support a shop providing that particular function. In theory each type would have its own network of equilibrium consisting of regular hexagonal trade areas the size of which would

be determined by the threshold of the function in question. Figure 2.5 depicts graphically a simple Loschian system of nets and market areas in which four nets of hexagonal market areas are superimposed in such a way that (i) all functions are present in the centre, (ii) the greatest number of locations coincide, (iii) local effective demand is at a minimum, (iv) the sum of the shortest distances between market centres is at a minimum, and, as a consequence, (v) total length of transport lines and therefore costs are at a minimum.



A theoretical pattern of an economic landscape adapted from Losch, A. (1939). The Economics of Location, by Isard, W. (1956). Location and Space Economy, Cambridge, Mass. Fig. 51.

Figure 2.5



A modified Losch system consistent with resulting population distribution. (Source: Isard, W. (1956). Location and Space Economy, Cambridge, Mass. Fig. 52.

Figure 2.6

Isard (1956, 271) suggests that the most serious deficiency of the Loschian economic landscape, when applied to an urban area, is that it postulates uniform distribution of consuming population whereas, in reality, greater concentrations of population are found about the central city. He offers a modified model (Fig. 2.6) in which the hexagonal market areas decrease in size as we approach the core of the city, recognizing that the size of a market area necessary to generate sufficient demand for a commodity decreases with increasing population concentration.

Berry's (1963, 113 - 117) analysis of the problem of commercial blight provides empirical evidence of a hierarchical retail system in Chicago. In his explanation he asks us to assume that a city is supplied with n different kinds of goods, and that these may be ranked in ascending order according to their threshold requirements. Highest order good n will require the largest area for its support and will presumably be supplied only by the CBD which is accessible to the entire city. All other goods will also be supplied by the CBD. As one descends the ranks of functions the area or, more correctly, the population around the CBD needed to provide the threshold sales volume for each will diminish progressively. The peripheral surplus will not be great enough to reach the threshold requirements of those goods ranked immediately beneath the highest order good (that is n - 1, n - 2, n - 3 etc.) so that these also must be supplied by the CBD alone.

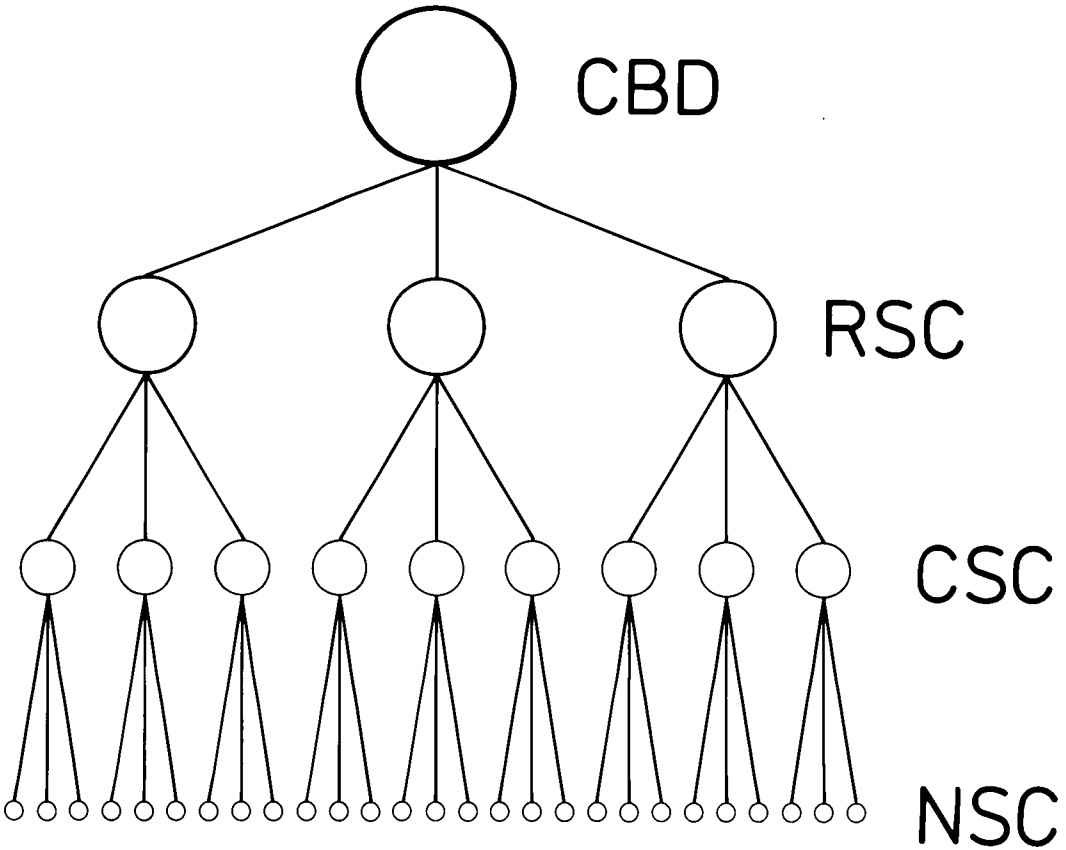
Further down the scale the peripheral surplus will amount to enough to support additional lower order functions in each of the radial sectors. These shops will presumably locate at points of maximum accessibility to the surplus markets and will form the

nuclei of regional shopping centres, supplying the highest order good whose threshold has been reached (say, n - 20) and all lower order goods. The trade areas of these regional shopping centres are dominated by the CBD for all higher order goods (n to n - 19) which the CBD supplies for the entire city, but the regional shopping centres will compete with the CBD in the supplying of lower order goods (n - 20 to 1), so that trade areas of all centres are kept to the minimum threshold level.

Again, as one descends the ranks of functions the population, or trade area, needed to provide the threshold sales volume for each function will diminish progressively and, again, the peripheral surplus around both the CBD and the regional shopping centres will not be great enough to reach the threshold requirements of those ranked immediately beneath the highest order good (n - 20) supplied by the regional shopping centre, so that these must be supplied either by the CBD or the regional shopping centre. A lower level of centres, the community shopping centres, emerge when a good is reached (say, n - 40) for which there are surpluses of appropriate threshold size located between the trade areas of the CBD and the regional centres. Again, competition keeps the trade areas of the CBD, the regional centres, and the community shopping centres at a minimum.

Figure 2·7

Urban Commercial Hierarchy



CBD = Central Business District
CSC = Community Shopping Centre
RSC = Regional Shopping Centre
NSC = Neighbourhood Shopping Centre

Repetition of this argument for lower order goods (say, n - 60) gives neighbourhood centres located between the CBD, the regional shopping centres, and the community shopping centres. Similarly, convenience centres come in with still lower order goods (say, n - 70), and isolated corner stores with the lowest order goods (n - 80 to 1). Berry's (1963 and 1965) analysis of the spatial structure of large American cities in the 1960's has shown that characteristics resulting from this pattern of development include a step-like hierarchy of centres and trade areas; regularities in spacing of centres of the same level, with higher-order centres evenly spaced but more widely spaced than lower-order centres; and an orderly nesting of centres which ensures that every low-order centre is served by every level of higher-order centre as illustrated in Figure 2.7.

The pattern of development described by Berry can be expected to give rise to a changing relationship between the CBD and the metropolitan area which it serves. While the city's total volume of retail trade can be expected to increase directly with the city's population growth, the trade of the CBD can be expected to grow at a somewhat slower rate, since new lower order centres will develop in response to any peripheral surplus that results from population growth. This means that as the city grows the CBD will command an ever decreasing proportion of the city's retail trade. At the same time the nature of that trade will change. Growth of metropolitan area population results in the satisfaction of higher order thresholds allowing the introduction of higher order, more specialized functions in the CBD. The same population increases also provide higher order thresholds in the trade areas of the regional centres so enabling those cen-

tres to compete with the CBD in the performance of those functions which, though not of the highest order, were previously of necessity performed only by the CBD.

The same argument applies to the thresholds of the smaller shopping goods centres so that these provide higher order functions previously only performed by the regional shopping centres, and so on, with competition always keeping the trade areas of the CBD, the regional centres, the community centres and lower order centres at a minimum.

As the city grows there will be a progressive 'movement' of lower order functions away from the CBD. In some cases this will involve an actual locational movement, but it could simply mean that a firm may start a branch in a suburb rather than expand a city enterprise. Or it could even mean that by changing the mix of commodities, by dropping its lower order functions or by amalgamation with another firm a retailer might adapt to the changing economic environment of its existing location rather than move to a new location. Lower order functions will never be completely eliminated from the CBD since it will continue to serve the lower order needs of residents of the inner city, and consumers who visit the CBD for higher order goods will, for convenience, include on their shopping lists lower order goods.

Trends of the kind described have led some to believe that ultimately the role of the CBD must be diminished to a level where it plays a negligible part in the life of the city. The new city, Vance (1964, 72) insists, has become non-centric. "This non-centric city," he says, "neither seeks nor flees from the centre. Rather it disregards it." His study of the geography and urban evolution in the San Francisco Bay Area leads him

to conclude that the city of San Francisco's insistence on primacy, its attempt to remain the focus of the Bay Area, is likely to fail. This view is contradicted both by those like Jonassen (1955) and Heinemeyer (1967, 93) who have investigated the attractiveness of the CBD to consumers, and those like Berry (1963) who are convinced that the hierarchical nature of the urban commercial structure will ensure the continued existence of the CBD.

II.2. Empirical Evidence of a Central Place System in Hobart

Two pieces of empirical evidence are offered in support of the thesis that a central place system exists in Hobart. The first is a summary of the findings of a number of surveys on the attributes of selected retail centres in Hobart. The second, using a totally different source of data, involves analysis of the regional distribution of all retail establishments in the Hobart metropolitan area. Together they provide convincing evidence, not only that a hierarchical central place system exists, but that changes involving the declining importance of the CBD should be regarded as inevitable as they are natural.

The attributes of a selection of retail centres in Hobart are summarized in table 2.1. From this we may say that there is one very large centre, both in terms of floor space and retail sales, which serves a considerable number of customers from a trade area covering the entire metropolitan area. (City customers travel, on average, 3.4 miles but as about 10 percent of all visitors to the main block in the inner city originate from rural areas beyond the boundary of the metropolitan area the average distance travelled is about 5 miles.) This is the centre to which the entire metropolitan area looks for its specialist needs, although it also offers the whole range of commodities.

About 40 percent of all central city shoppers use public transport. However, 46 percent travel by private car in spite of traffic congestion and parking difficulties. A high proportion of office workers visit the central shopping block several times a week but others, whose main reason for being in the inner city is to shop, come less frequently.

TABLE 2.1

ATTRIBUTES OF SELECTED RETAIL CENTRES : HOBART, 1974

	Corner Store[5]	Supermarket[6]	K-mart[7]	Main Shopping Block CBD[8]
Number of Centres	290[1]	15[9]	2[10]	1
Centre Size ('000 sq. ft.)	0.5[e]	11	105	396[3]
Retail Sales ($'000 p.a.)	55[1]	946[1]	3783[1]	23259[2]
Population served daily	100[e]	980[e]	3500[e]	20000[4]
Mean distance travelled	0.32	1.04	1.86	5.03
Percentage using private car	70	80[e]	86.9	46
Distance to nearest centre of comparable size	0.25	3.6	4.2	>100

Sources of Data

(e) Estimate

(1) C.B.C.S. (1973d). Mean retail sales for establishment type in Hobart. K-mart equated with a department store plus a supermarket.

(2) C.B.C.S. (1973d). Estimated as 40% of S.R.A. 6000 sales.

(3) Hobart City Council (1970). Table 3.

(4) Smith (1965). 34

(5) Edwards (1974)

(6) Andrews (1973)

(7) Cutforth (1974)

(8) Courtney (1973)

(9) Courtney (1974a)

(10) Courtney (1974b)

Next, occupying about ¼ of the floor space of the main central city block is a small number of shopping centres which serve a substantial region within the city. Customers travel, on average, about 2 miles to the regional centre, from which they can purchase the full range of convenience goods and all but the most specialized durable goods. The centre specializes in the sale of mass appeal goods and offers also the inducement of ample free parking and discount prices. Almost 87 percent of all visitors to the regional centre travel by private car, and over half patronize the centre on a regular weekly basis.

The supermarket, occupying a dominant role in a community shopping district, serves the needs of a still smaller number of customers. On average, supermarkets are rather less than 1/10 the size of the regional shopping centre and specialize in the sale of groceries and other convenience goods, although the tendency is for newer supermarkets to be bigger in size and to offer a wider range of goods, including some ready made mass appeal clothing. About 80 percent of supermarket customers travel by car an average distance of about a mile and visit the supermarket weekly, mostly on Thursdays and Fridays.

The smallest of all retail centres, the corner store, generally occupies no more than the front of a private dwelling in an isolated suburban location, where it provides frequently needed convenience goods such as milk, bread, cigarettes, standard brands of confectionery and a limited range of groceries. Those situated on main transport routes depend to some extent upon passing traffic, but most serve a small number of regular customers who visit them several times a week. Although within easy walking distance of most of its customers, 70 percent of all visitors to the corner stores surveyed travel by car.

There is evidence then of a hierarchy of shopping centres based upon level of goods sold, frequency of demand, and distance consumers are prepared to travel to satisfy that demand. Local factors such as relief, population density, proximity of employment opportunities and other shopping facilities influenced the shape of trade areas and their pattern of distribution, but competition appeared to play the dominant role in determining the mean distance between retail centres of the same order of magnitude. In all cases there was a marked decline in patronage with distance from a particular centre, but it was found that because of the comparatively small distances involved in the urban region and the ease of movement resulting from a high level of private motor vehicle ownership, trade areas of centres of the same level overlapped. In general, the distribution of retail centres was such that customers were served by all levels of centre, the distances of which were inversely proportional to frequency of visits.

TABLE 2.2

RANK AND SIZE OF HOBART'S RETAIL CENTRES - 1969

Rank	Retail Centre	Size ($million Retail Sales)(a)	Retail Types	Number of Establishments
1.	Inner City	54.4	37	612
2.	Moonah	12.5	29	140
3.	Glenorchy	10.5	27	113
4.	Sandy Bay	10.2	26	84
5.	New Norfolk	6.1	23	71
6.	New Town	4.9	20	53
7.	Lindisfarne	4.4	15	36
8.	North Hobart	4.2	14	38
9.	Rosny	3.3	21	28
10.	Bellerive	2.8	20	46
11.	Kingston	2.5	13	31
12.=	Claremont	1.9	11	20
12.=	Sorell	1.9	11	20
14.	Chigwell	1.6	7	15
15.	Risdon Vale	1.5	9	10
16.	Lenah Valley	1.3	10	24
17.	West Hobart	1.0	5	9
18.	Opposum Bay	0.86	4	6
19.	Warrane	0.75	6	15
20.	Bridgewater	0.72	6	9
21.	Taroona	0.71	8	9
22.	Derwent Park	0.69	6	9
23.	Howrah	0.53	13	25
24.	Geilston Bay	0.44	3	4
25.=	Collinsvale	0.42	2	3
25.=	Blackmans Bay	0.42	4	5
27.	South Hobart	0.39	5	6
28.	Mt. Stuart	0.38	3	3
29.	Cambridge	0.37	2	2
30.	Battery Point	0.35	7	12
31.	Rokeby	0.29	2	2
32.	Lauderdale	0.26	3	4
33.	Berriedale	0.24	5	5
34.=	Montagu Bay	0.17	5	5
34.=	Montrose	0.17	3	6
36.	Austins Ferry	0.14	3	5
37.	Lutana	0.12	2	2
38.=	Dynnyrne	0.11	1	2
38.=	Rose Bay	0.11	1	2
38.=	Springfield	0.11	1	2
41.=	Goodwood	0.05	1	1
41.=	Mt. Nelson	0.06	1	1
41.=	Tranmere	0.06	1	1
	TOTAL	133.92		1496

Note

(a) The size of each retail centre was determined by summing the product of all establishment types in the centre(1) multiplied by their respective retail sales(2).

Sources

(1) Department of Labour and Industry (1969)

(2) See Table 2.3

TABLE 2.3

MEAN RETAIL SALES PER ESTABLISHMENT : HOBART STATISTICAL DIVISION

1968-69

ASIC Code	Establishment Type	Mean Retail Sales per Est. ($'000)
4811	Department Stores	2837.17
4812,3	Variety & General	313.21
4821	Supermarkets	946.13
4822	Grocers & Tobacco	55.90
4823	Butcher	12.47
4824	Fruit & Vegetables	59.58
4825	Liquor	82.09
4826	Confectionery & Soft Drink	26.44
4827	Fish & Chips	32.15
4828	Bread & Cake	22.00
4831	Bread Vendors	23.65
4832	Milk Vendors	151.29
4841	Furniture & Floor Coverings	224.83
4842	Fabrics	69.92
4843	Men's & Boy's Wear	79.41
4844	Women's, Girl's & Infants	68.20
4845	Footwear	85.17
4846	Shoe Repairs	0.2
4851	Household Appliances	132.73
4852	Household Electrical Appliances	12.08
4853	China/Glass/Domestic Hardware	49.75
4854	Jewellers	48.61
4855	Musical Instruments	64.2
4861	New Motor Vehicles	330.67
4862	Used Motor Vehicles	277.38
4863	Tyre & Battery	150.63
4864	Service Stations	64.70
4865	Smash Repairs	1.48
4866	Motor Cycle	23.43
4867	Boat & Caravan	72.25
4871	Pharmacies	69.15
4872	Photographic	89.83
4873	Sport, Bicycle, Toys	46.92
4874	Newsagents, Booksellers	82.35
4875	Antique & Secondhand Goods	14.22
4876	Florists	15.84
4877	H.E.C.	38.58
9113	Picture Theatres	10.50
9211	Cafes	10.95
931	Dry Cleaners	0.06
9321	Men's Hairdressing	1.70
9322	Women's Hairdressing	1.80

Source

C.B.C.S. (1973d).

TABLE 2.4

HOBART'S CENTRAL PLACE SYSTEM - 1969

Number of Centres	k=3	Size of Centre ($million Sales)	Type of Centre
1(1)	1	> 50	CBD
3(1)	3	10 - 50	Regional
7(1)	9	2 - 10	Community
29(1)	27	0.1 - 2	Neighbourhood
96(2)	81	< 0.1	Convenience

Source of Data

(1) See Table 2.3

(2) Based on an estimate that 1/3 of all 290 Grocers & Tobacconists in Hobart metropolitan area (C.B.C.S., 1973d) were isolated corner stores.

In reality, retail centres consist of clusters of various types of establishments. Table 2.2 shows that in 1969 there were 40 such clusters, (shown in Figure 2.8.) ranging from the smallest consisting of two corner stores located together, to the inner city shopping district where over 600 establishments representing 37 retail establishment types provided the whole range of goods. Pearce (1974) has ranked and classified these centres according to size (Table 2.4) to show that an exponential relationship exists between the number of centres at one level and the number of centres at the next level in the hierarchy. In Hobart there is a close approximation to a $k = 3$ relationship, there being one CBD, 3 regional centres, 7 community centres, 29 neighbourhood centres and, if we accept that 1 in 3 grocers and tobacconists are scattered in isolated locations through the suburbs, 96 convenience centres.

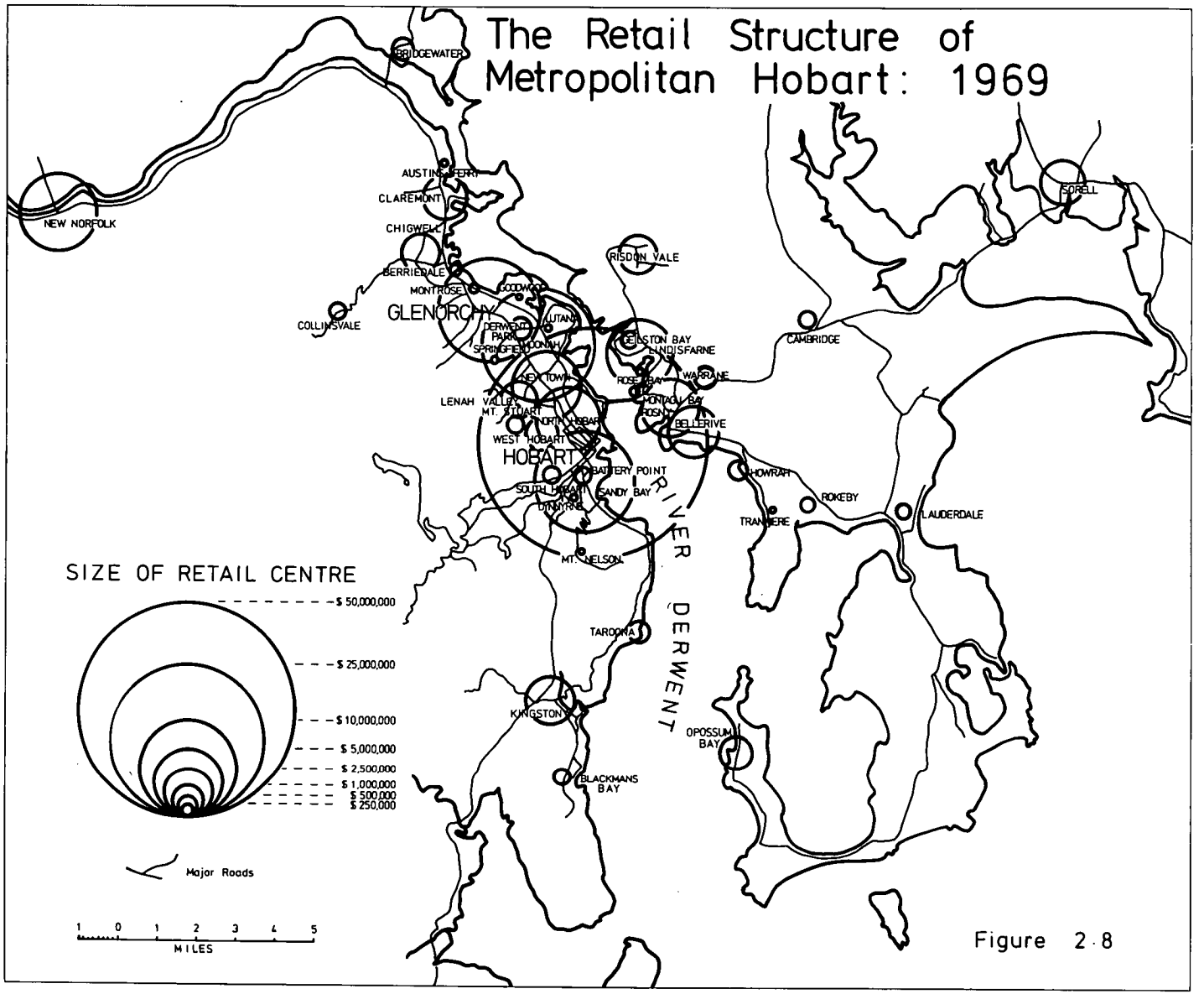
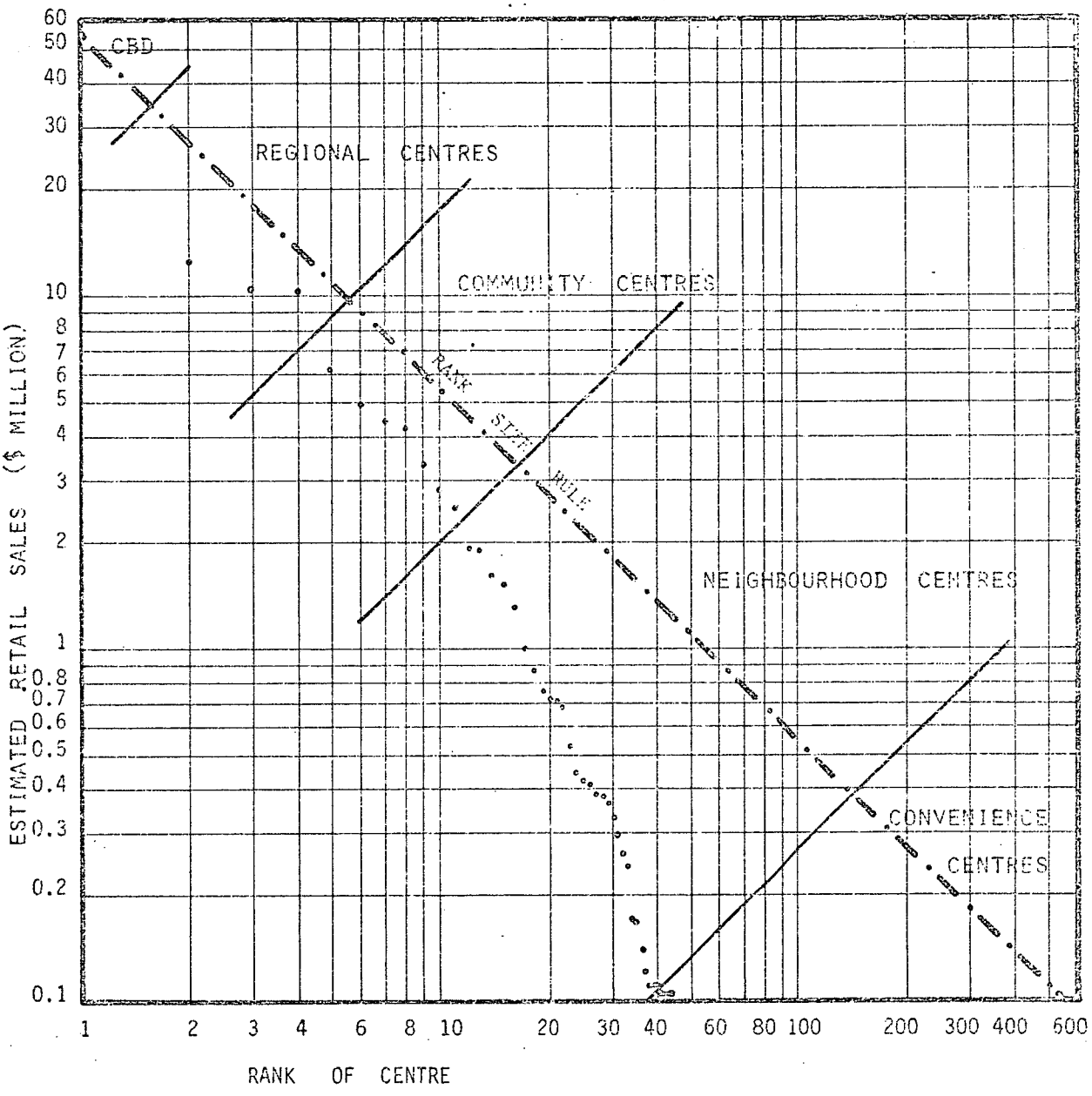

The Retail Structure of Metropolitan Hobart: 1969
BRIDGEWATER
AUSTINS FERRY
CLAREMONT
CHIGWELL
NEW NORFOLK
BERRIEDALE
MONTROSE
GOODWOOD
COLLINSVALE
GLENORCHY
DERWENT PARK
SPRINGFIELD
LUTANA
MOONAH
RISDON VALE
GLENSTON BAY
LINDISFARNE
CAMBRIDGE
SORELL
NEW TOWN
ROSE BAY
WARRANE
LENAH VALLEY
MT. STUART
NORTH HOBART
MONTAGU BAY
ROSNY
BELLERIVE
WEST HOBART
HOBART
BATTERY POINT
SOUTH HOBART
SANDY BAY
DYNNYRNE
RIVER DERWENT
HOWRAH
ROKEBY
TRANMERE
LAUDERDALE
MT. NELSON
TAROONA
KINGSTON
OPOSSUM BAY
BLACKMANS BAY
SIZE OF RETAIL CENTRE
$ 50,000,000
$ 25,000,000
$ 10,000,000
$ 5,000,000
$ 2,500,000
$ 1,000,000
$ 500,000
$ 250,000
Major Roads
1 0 1 2 3 4 5
MILES

Figure 2.8

The five levels in the urban retail hierarchy of Hobart appear to be consistent with what is found in other cities where similar energy flows prevail (Berry, 1967, 46). It would appear, however, that the size of the centre varies according to the size of the city concerned, so that in cities of over one million the regional centres may be the size of Hobart's CBD and the convenience centres the size of Hobart's neighbourhood or community centres. We can expect, therefore, that as Hobart grows its centres will grow in size while maintaining roughly the same hierarchical structure over time. Within this pattern some variability can be expected so that some centres, perhaps not yet in existence, may come into prominence and take the place of others now occupying a higher rank, so leading to the down-grading of all existing centres in the system. Similarly, as the city grows we can expect regional centres to challenge the CBD in the provision of high order goods.

RANK - SIZE DISTRIBUTION OF SHOPPING DISTRICTS:
HOBART - 1969



For names of centres refer to Table 2.2

Figure 2.9

When the system has reached a steady state Hobart's centres can be expected to follow the rank-size rule. In 1969 the CBD was over four times the size of the next largest centre, Moonah, and about five times the size of Glenorchy and Sandy Bay, the third and fourth centres respectively. The rank-size relationship of all centres in the Hobart retail system is illustrated in Figure 2.9, from which it may be seen that, while there is general conformity to the rank-size distribution, there is a tendency for centres to depart progressively from the rank-size rule as their size diminishes. We may say, therefore, that while the system is close to a steady state, it is not in a perfect state of equilibrium. The progressive falling away from the rank-size rule suggests that the needs of the communities served by the smaller centres are inadequately met. If a steady state is to be achieved, these smaller retail centres will need to grow at a faster than average rate, as in fact they are doing in the newly established suburbs, and the entire range of suburban centres will need to grow at a more rapid rate than that experienced by the CBD which, with 40.62 percent of the retail sales* and 40.91 percent of the establishments of the entire metropolitan area, continues to assume a dominant role in the urban retail system of Hobart.

---

* The Economic Census of 1968-69 (C.B.C.S., 1973b, Table 11) confirms that 40.53 percent of all retail sales are conducted in the CBD. The inner city, as defined in Table 2.2, however, includes rather more establishments than S.R.A. 6000.

II.3. The Retail Structure of Metropolitan Hobart - 1969

So far we have been concerned with central place theory and evidence of the existence of a central place system in the Hobart metropolitan area. Case studies show not only that an intra-urban retail system exists in Hobart, but that in 1969 the system was in a state of transition. For the system to achieve a steady state adjustments needed to be made to the supply side which would bring about changes to existing trade areas. These adjustments would, in turn, affect the role of the CBD so that it would become less important in the metropolitan retail structure of Hobart. What follows is a descriptive statistical analysis of the broad regional structure of the system to (a) show the distribution of the system's retail establishments, employees and sales in relation to population, (b) determine the origin of the CBD's retail trade, and (c) identify regional imbalances between the demand and supply.

Hobart Statistical Division, with a total population of about 153 000 persons in 1968-69 generated a total of $150 million retail trade, that is, roughly $978 per head of population[*] (Table 2.5). Of this amount each person spent, on average, about $587

---

[*] Population figures refer to 1971 Census data. In the two-year interval since the Economic Censuses of 1968-69 Hobart's population will have grown by about 5000 with different parts growing at different rates. Rather than estimate the population of the Statistical Retail Areas at 30th June 1969, the 1971 Census data has been used in all calculations. This has had the effect of changing the overall ratio between population and retail variables. For instance it has had the effect of reducing the number of establishments from 11.52 to 11.16 per 1000 persons. Discrepancies of this magnitude do not invalidate the generalizations made in this section.

or roughly 60 percent in his local Statistical Retail Area (SRA) and 391, or 40 percent, outside the local SRA. Most of the purchases made outside the local SRA were made in the Inner City Area[***]. The extent to which each retail area satisfied its own needs is shown by location quotients (L.Q.)[****] in Table 2.5. The Inner City Area, with an L.Q. of 46.6 was obviously the major centre of retail sales in the Hobart Statistical Division; the remainder of Hobart City came closest to supplying its own needs with an L.Q. of 0.78; Glenorchy with an L.Q. of 0.66 satisfied little more than half its needs, and the remaining retail areas with an average L.Q. of 0.39 satisfied a relatively small share of their needs. The non-contiguous urban areas of New Norfolk (L.Q. = 0.70) and Sorell (L.Q. = 0.55) supplied rather more of their needs than did the contiguous outlying suburbs of Brighton (L.Q. = 0.45) and Kingborough (L.Q. - 0.27), and Clarence, with

---

[***] The logic of this is as follows: On average, each person in Hobart Statistical Division spent $978 on retail goods ($\frac{\text{H.S.D. Sales}}{\text{H.S.D. Pop'n}} = \frac{\$149\ 672\ 000}{153\ 024} = \$978.09$). Since the population of each SRA is known (Table 2.5) it is possible to determine total expenditure per SRA (Population of SRA x $978). Total retail sales within each SRA are known (Table 2.5), therefore total value of purchases made outside each SRA may be determined (Table 2.6). Total sales made outside all SRA's (other than the CBD itself) amount to $59.364 million. This represents 97.86 percent of all CBD retail sales.

[****] For definition and formula see Appendix A.

a quarter of the entire Division's population and an L.Q. of only 0.35, was clearly undersupplying its own basic retail requirements.

The Inner City Area, with less than one percent of Hobart Statistical Division's population, accounted for about 41 percent of the retail sales, 40 percent of the employees, and 27 percent of the retail establishments of the Division. Inner City Area establishments varied appreciably in size from large department stores to tiny kiosks but, on average, employed about 50 percent more staff and accounted for 51 percent higher sales than the average for the Division as a whole (Table 2.7). Between 7 and 8 Inner City establishments generated ($1 million retail sales compared with about 11.4 establishments per $1 million for the region as a whole. Shops in the Inner City had a higher level of labour productivity than the average for the Division as a whole although the Inner City customer expected to get a higher level of personal service and sales advice from specialist shops in the central shopping district.

Surrounding the Inner City Area and within three miles of the central shopping district lay the Remainder of Hobart City with one third of the population of Hobart Statistical Division (Figure 1.5). Immediately to the north in the City of Glenorchy lived a further 28 percent of the Division's population. Together these twin cities, which included the oldest and most densely populated parts of the city, accounted for 62 percent of the population. Retail sales in these two areas amounted to 44.68 percent of the Division's total, and it is estimated that 40.88 percent of the Inner City Area's trade came from the Remainder of Hobart (17.75%) and Glenorchy (23.13%), providing roughly $24.8 million worth of

trade (Table 2.6).*

The remainder of Hobart and the City of Glenorchy combined had 50.73 percent of the Division's retail establishments and 45.08 percent of the employees engaged in retailing so that, compared with the Inner City Area, establishments tended to be smaller and employ fewer persons. Thirteen shops were needed to generate $1 million worth of sales and each shop, on average, employed about six persons. (Glenorchy, where supermarket activity had lead to increased labour-saving techniques, registered the highest sales per employee of any retail area.) Virtually all of these establishments were located in unplanned string--street shopping districts along the major roads leading north,

---

* If one assumes that each person spends on retailing the average figure of $978.09, and that the proportion not spent in the local retail area is spent in the Inner City Area, then it could be said that each person in Hobart (Remainder) spends $210.77, that is, 22% of his total retail budget in the Inner City Area (Table 2.6). Similarly, each person in Glenorchy spends $329.19 or ⅓ of his retail budget outside Glenorchy, presumably in the Inner City Area. This amounts to $24.8 million or 40.88% of the entire Inner City Area retail sales each year. The underlying assumptions of this argument are supported by the fact that the total retail sales made outside all Statistical Retail Areas, other than the Inner City Area, account for 97.86% of the total retail sales in the Inner City Area, the remaining 1.14% being accounted for by residents of the Inner City Area and visitors from outside the Hobart Statistical Division.

south and west from the Inner City Area (Figure 2.8). North of the CBD retailing had been confined to Upper Elizabeth Street in North Hobart and its northward extension known as Main Road in New Town, Moonah, Glenorchy and Claremont. South of the CBD retailing was confined to what amounted to a string-street development along Sandy Bay Road, with a concentration at Magnet Court, and westward a few stores were strung out at irregular intervals along Macquarie Street. Apart from this, a scattering of isolated corner stores served the day-to-day needs of communities off the main routes. All planned shopping centre development that has taken place in the retail areas of Hobart City and Glenorchy has been subsequent to the 1968-69 Retail Census.

On the Eastern Shore Clarence, which had boasted the fastest growth rate of any local government area, exhibited a marked deficiency in retailing facilities. With 24 percent of Hobart Statistical Division's population, but only 8 percent of the Division's retail sales it had a L.Q. of 0.35. It had the smallest number of establishments per head of population of any Statistical Retail Area, and these, on average, were small so that 15 to 16 were required to generate $1 million worth of trade. As one might expect from these figures 65 percent, that is, $23.7 million worth of retail sales were made outside Clarence (Table 2.6) and accounted for 39.05 percent of the Inner City Area trade.

Also on the east bank of the Derwent, but only just within Hobart Statistical Division were the small rural service centres of Brighton, thirteen miles north of the central shopping district, and Sorell, sixteen miles east of the central shopping district. Between them they accounted for only 2.5 percent of the population of Hobart Statistical Division and 1.31 percent of the Division's retail sales, giving them L.Q.'s of about 0.5.

Retail sales in these small settlements were confined to convenience goods. (It would have required 18 to 22 establishments to generate $1 million worth of trade.) Between 45 percent and 55 percent of all retail purchases were made outside these retail areas, probably contributing about 3 percent to the Inner City Area's retail trade.

Kingborough, like Clarence, was an area of rapid growth in which a substantial lag was evident in the supply side of the market. It had 6.37 percent of the Division's population but only 3.8 percent of the establishments and 1.75 percent of the retail sales. With an L.Q. of 0.27 for retail sales it is not surprising that 72.5 percent of all retail purchases were made outside the retail area. Sales in Kingborough were made from the smallest establishments in the Division, each, on average, employing only 3.7 persons and requiring over 25 to generate $1 million worth of trade. Purchases worth about $6.9 million were made outside the Kingborough retail area, contributing about 11.4 percent of the retail sales of the Inner City Area.

Located to the far northwest of Hobart Statistical Division New Norfolk exhibited an independence which one would expect from a small satellite town 20 miles from the central shopping district and 8½ miles from the city fringe. With 4.8 percent of the population it had 4.98 percent of the retail establishments, 3.48 percent of the employees and 3.38 percent of the retail sales of the Hobart Statistical Division. New Norfolk's establishments were small compared with those of other parts of the Division, each establishment employing fewer than 5 persons on average, so that it would have taken almost 17 to generate $1 million worth of trade. Since New Norfolk is itself a service centre for the surrounding area, part of its retail sales would have originated out-

side the New Norfolk retail area. If we assume, however, that each person spent $288.45 or 30 percent of his retail budget in the Inner City Area, then this retail area contributed $2.1 million or 3.49 percent of the retail sales of the Inner City Area.

TABLE 2.5

RETAIL AND SELECTED SERVICE ESTABLISHMENTS FOR HOBART STATISTICAL DIVISION

SUMMARY OF OPERATIONS BY STATISTICAL RETAIL AREA - 1968-69

SRA Number	Local Government Components	Establishments[a]			Employees[a]			Retail Sales[a]			1971 Population[b]	
		No.	%	LQ	No.	%	LQ	$'000	%	LQ	Persons	%
6000	Hobart - Inner City	459	26.89	30.91	4639	40.17	46.17	60661	40.53	46.59	1325[c]	0.87
6001	- Remainder	514	30.11	0.90	3339	28.91	0.87	39210	26.20	0.78	51100[c]	33.39
	TOTAL 6000 & 6001	973	57.00	1.66	7978	69.09	2.02	99872	66.73	1.95	52425	34.26
6002	Glenorchy City	352	20.62	0.74	1867	16.17	0.58	27656	18.48	0.66	42620	27.85
	(Clarence	193	11.31	0.47	900	7.79	0.32	12512	8.36	0.35	37013	24.19
	(Brighton	13	0.76	0.87	52	0.45	0.52	583	0.39	0.45	1333	0.87
6003	(Kingborough	66	3.87	0.61	242	2.10	0.33	2616	1.75	0.27	9740	6.37
	(New Norfolk	85	4.98	1.04	402	3.48	0.73	5064	3.38	0.70	7343	4.80
	(Sorell	25	1.46	0.87	107	0.93	0.56	1370	0.92	0.55	2550	1.67
	TOTAL 6003	382	22.38	0.59	1703	14.75	0.39	22145	14.80	0.39	57979	37.89
	GRAND TOTAL	1707	100	1.00	11548	100	1.00	149672	100	1.00	153024	100

Sources

(a) C.B.C.S., (1973c), Table 11, 46.

(b) C.B.C.S., (1973a), 163.

(c) Unpublished data provided by the Australian Bureau of Statistics, Hobart.

TABLE 2.6

SOURCE OF HOBART INNER CITY AREA RETAIL SALES - 1968-69

RSA Number	Local Government Component	Sales per Person INSIDE SRA	Sales per Person OUTSIDE SRA	Percentage of Sales Made OUTSIDE SRA	Total Sales OUTSIDE SRA ($'000)	Total Sales OUTSIDE SRA as a Percentage of INNER CITY AREA SALES	SRA POPULATION as a Percentage of the Population of Hobart Retail Division
6001	Hobart - Remainder	767.32	210.77	21.55	10770	17.75	33.39
6002	Glenorchy	648.90	329.19	33.66	14030	23.13	27.85
	(Clarence	338.04	640.05	65.44	23690	39.05	24.19
	(Brighton	437.36	540.73	55.28	721	1.19	0.87
6003	(Kingborough	268.58	709.51	72.54	6911	11.39	6.37
	(New Norfolk	689.64	288.45	29.49	2118	3.49	4.80
	(Sorell	537.25	440.84	45.07	1124	1.85	1.67
	TOTAL 6001, 6002, 6003	-	-	-	59364	97.86	99.14
	MEAN 6001, 6002, 6003	586.76	391.33	40.01	-	-	-
6000	Hobart - Inner City Area	978.09	NIL	NIL	(1296)	(2.14)	0.87
	GRAND TOTAL	-	-	-	60660	100.00	100.00

Source

Table 2.5

TABLE 2.7

RETAIL AND SELECTED SERVICE ESTABLISHMENTS FOR HOBART STATISTICAL DIVISION

RATIOS OF ESTABLISHMENTS, EMPLOYEES AND RETAIL SALES BY STATISTICAL RETAIL AREA - 1968-69

SRA Number	Local Government Components	Employees, Retail Sales and Population per ESTABLISHMENT			Establishments, Employees and Retail Sales per 1000 POPULATION			Establishments, Retail Sales and Population per EMPLOYEE			Establishments, Employees and Population per SALES $'000,000		
		Employees	Sales $'000	Pop.	Estab.	Sales $'000	Employees	Estab.	Sales $'000	Pop.	Estab.	Employees	Pop.
6000	Hobart - Inner City	10.11	132.16	2.89	346.42	45781.89	3501.13	0.10	13.08	0.29	7.57	76.47	21.84
6001	- Remainder	6.50	76.28	99.42	10.06	767.32	65.34	0.15	11.74	15.30	13.11	85.16	1303.24
	TOTAL 6000, 6001	8.20	102.64	53.88	18.56	1905.05	152.18	0.12	12.52	6.57	9.74	79.88	524.92
6002	Glenorchy City	5.30	78.57	121.08	8.26	648.90	43.81	0.19	14.81	22.83	12.73	67.51	1541.08
6003	(Clarence	4.66	64.83	191.78	5.21	338.04	24.32	0.21	13.90	41.13	15.43	71.93	2958.20
	(Brighton	4.00	44.85	102.54	9.75	437.36	39.01	0.25	11.21	25.63	22.30	89.19	2286.45
	(Kingborough	3.67	39.64	147.58	6.78	268.58	24.85	0.27	10.81	40.25	25.23	92.51	3727.24
	(New Norfolk	4.73	59.58	86.39	11.58	689.64	54.75	0.21	12.60	18.27	16.79	79.38	1450.04
	(Sorell	4.28	54.80	102.00	9.80	537.25	41.96	0.23	12.80	23.83	18.25	78.10	1861.31
	TOTAL 6003	4.46	57.97	151.78	6.59	381.95	29.37	0.22	13.00	34.05	17.25	76.90	2618.15
	GRAND TOTAL	6.77	87.68	89.64	11.16	978.09	75.47	0.15	12.96	13.25	11.40	77.16	1022.40

Source

Table 2.5

In conclusion we may say that in 1969 the CBD played a dominant role in the metropolitan retail structure of Hobart. All SRA's within the Hobart Statistical Division fell within its trade area and contributed to its trade. The extent of the individual SRA contribution appears to have been related to a number of factors including, for instance, distance from the CBD, population size, density and growth rate. The older, more densely populated inner suburbs, and the most distant isolated satellite town, New Norfolk, came closest to supplying their own needs. Nevertheless, they looked to the CBD for between $\frac{1}{4}$ and $\frac{1}{3}$ of their needs, and together accounted for roughly 44 percent of CBD sales. The fastest growing areas, Clarence and Kingborough, showed the most marked deficiency in supply with the result that over $\frac{2}{3}$ of all purchases were made in the CBD, accounting for $\frac{1}{2}$ of all CBD retail sales. There appears to be no reason why Clarence, with a trade area population of 37 013, should not have supported all but the highest order goods in a regional retail centre at least as large as that of Sandy Bay or Moonah which, according to Table 2.2 were three or four times the size of Lindisfarne, Clarence's largest shopping district.

C H A P T E R I I I

CHANGING DEMAND FACTORS

III.1. Introduction

Long run changes affecting the role of the CBD in the metropolitan retail structure of Hobart are largely the result of changing relationships between 'environment' and system. Energy inputs come from demands of consumers, who constitute the 'environment' of the system. These are balanced by outputs of the system - goods supplied to consumers. Interrelationships between consumer and supplier, together with a wide range of other factors such as changing means of transportation, government housing policy, imposition of land use planning through zoning, changes in merchandizing, etc., then determine the spatial distribution of retailing. Changes in one or more of the components bring about complementary changes in the other components of the system. The most important attributes of the 'environment' - population size and growth, level and growth of real income, and trends in consumer spending - are examined in some detail in this chapter.

Geographers (Brunhes, 1920, 605; Harvey, 1966, 370; Garner, 1967, 335) have long recognized that spatial structures are the end product of a multitude of decisions made by different individuals at different times about location. However, most would agree with Peters (1958, 149) that, in order to make human actions intelligible, it is perfectly appropriate to classify those actions as being of a certain sort, and that, in order to develop theories of motivation it is necessary to aggregate data. Certainly, the theories of consumer behaviour postulated by economists, psychologists and sociologists alike are based upon an aggregative

view of the consumer.* Their concepts of 'demand', 'need' and 'social conformity' have developed from the observation of the collective behaviour of large social groups consisting of individuals, each one of whom may act with apparent freedom. It may be argued that the spatial patterns associated with retailing develop as the result of the collective behaviour of socio-economic groups, each consisting of individuals whose object is to satisfy his needs in accordance with the principle of least effort.**

---

* Theories of consumer behaviour postulated by economists, psychologists and sociologists, as Harvey (1969, 120) suggests, do provide valuable insight into consumer behaviour and for this reason are summarized in Appendix B.a. At the same time it seems that Peters's (1958) view, that no all-inclusive theory of motivation can be found to explain all man's actions, applies equally well to a comprehensive theory of consumer behaviour at present.

** The principle of least effort is an implicit assumption of central place theory as it is throughout this study. For a brief explicit statement see Appendix B.b.

III.2. Population Growth and Distribution in the Hobart Metropolitan Area

The population of urban Hobart increased 8.75 percent in the intercensal period between 1966 and 1971, - most of the expansion taking place in the form of low density sprawl on the periphery of the city where growth rates of between 10 and 24 percent were recorded (Table 3.1). During the same period the population of the more densely populated inner part of the city actually dropped 0.76 percent. Changes made to the statistical divisions in 1966 make comparison with earlier periods difficult, but the trend of dispersal of population from the inner city to outer suburbs is well established, and has been actively encouraged in the post-war era by government policy. In 1945 the Commonwealth Government entered into an agreement with the States whereby it would provide finance for housing projects to be built by State Governments. The proportion of houses built for government authorities in Hobart in 1970-71 was 28 percent of the total houses completed (C.B.C.S., 1973a, 439), but this figure does not fully reflect the effect of government policy since houses built for 'private persons' includes construction financed, in some cases, by government loans to private persons. Government policy has had the effect of dispersing lower socio-economic groups from the inner city and reducing population densities near the core. It should be noted, however, that in spite of decentralization of population, about 40 percent of the total urban population resides within three miles of the city centre and therefore lies within easy reach of the central shopping district.

TABLE 3.1

POPULATION OF URBAN HOBART[1] AND HOBART STATISTICAL DIVISION[2]

1966-1971

Components	Census 30.6.1966	Census 30.6.1971	Intercensal Persons	Change Percent	Mean Annual Percentage Change	Percentage of Urban Hobart in 1971	Percentage of Hobart Statistical Division
URBAN HOBART							
Hobart City	52139	51741	-398	-0.76	-0.15	39.82	33.77
Clarence	26986	33663	6677	24.74	4.95	25.91	21.97
Glenorchy	37770	41666	3896	10.32	2.06	32.07	27.19
Kingborough	2574	2858	284	11.03	2.21	2.20	1.87
TOTAL URBAN HOBART	119469	129928	10459	8.75	1.75	100.00	84.80
OTHER URBAN CENTRES							
New Norfolk	5770	6839	1069	18.53	3.71		4.46
Kingston	3263	3688	425	13.02	2.60		2.41
Sorell	1652	2029	377	22.82	4.56		1.32
Lauderdale	916	1329	413	45.09	9.02		0.87
TOTAL OTHER URBAN	11601	13885	2284	19.69	3.94		9.06
TOTAL URBAN	131070	143813	12743	9.72	1.94		93.86
RURAL	10241	9403	-838	-8.18	-1.64		6.14
TOTAL HOBART STATISTICAL DIVISION	141311	153216	11905	8.42	1.68		100.00

Sources

(1) C.B.C.S. (1971a). 8.

(2) A.B.S. (1974a). 156.

At the same time the settlement pattern in the outer suburbs has been dominated by the hilly nature of Hobart's terrain which has led to an attenuated form with comparatively few areas of high density. Typically, the moderate slopes of the valley floor are first selected, then the lower hill sides, with upper constraints set by lack of reticulated water above about 300 feet and planning regulations designed to preserve the natural sky-line. Subsequently the spurs and northern aspects of hills in the more desirable suburbs such as Mount Nelson and Mount Stuart, close to the city centre, are selected, with gullies all too often designated by planning authorities as 'open space'. Consequently in 1971 about 12 percent of the population of the Hobart Statistical Division lived in isolated non-contiguous pockets with fewer than 500 persons to the square mile and could therefore not be classified as 'urban'. Furthermore, 1.3 percent of the population of Hobart City, and 2.3 percent of Glenorchy City was classified as 'rural' (C.B.C.S., 1973a, 161).

Even in those parts where relatively extensive areas of moderately flat land do exist, and where one might expect concentrated purchasing power, such as Risdon Vale, Claremont and Rokeby, much of the land has been acquired by the Housing Department for schemes housing younger families of lower socio-economic status. Here residential density levels are about the same as one would find in more affluent suburbs, but provision of shopping facilities is minimal. Thus we have in Hobart a pattern of population decentralization which has led to a comparatively diffuse settlement pattern, giving rise, until the 1970's, to the development of small unplanned shopping centres. It is, therefore, not altogether surprising that the CBD has continued to assume a dominant role (Free, 1970, 17) in the Metropolitan retail structure of Hobart.

Unlike British and American cities, Hobart has comparatively few foreign-born migrants and, according to a survey undertaken by Scott (1965, 466) in 1963-4, these are by no means confined to the inner suburbs. Of two districts known to have had higher than average concentrations of migrants, an inner district, North Hobart, was found to have one-fifth of its population continental European, and an outer district at Springfield one-third. While the foreign-born element of the population is no more than about 10 percent of the total (Farmer, 1965, 50) their presence, it is said, has raised the level of sophistication of the average Australian's taste, as is seen in the increase in number and improvement in quality of restaurants and delicatessens (Free, 1970, 19).

III.3. Growth of Real Income

Steady growth in Hobart's population, coupled with substantial growth in real income per head of population, has led to increased purchasing power which has had a marked impact upon retailing in the central shopping district. Rapid growth in population between 1947 and 1966 resulted in a 46.8 percent increase in the workforce (C.B.C.S., 1971.b, 6). During the same period the proportion of females in the workforce rose from 20 percent to 27 percent (C.B.C.S., 1971.b, 6) suggesting an increasing proportion of families with two wage earners. During this period the earning capacity of women increased appreciably with the adoption and implementation of the principle of equal pay for equal work (C.B.C.S. 1973a, 572). In 1950 the Commonwealth Court of Conciliation and Arbitration fixed the female basic wage at 75 percent of the male rate (it had previously been as low as 54 or 56 percent). In 1966 the State Parliament passed legislation designed to establish equal-

ity, by 1972, among employees in the public sector where female employees were performing 'work of the same or like nature and of equal value'. The example set by the State government undoubtedly had the effect of raising female wages in other sectors. Then in 1969 the Commonwealth Conciliation and Arbitration Commission accepted the principle of 'equal pay for equal work'.

At the same time employees in Hobart enjoyed the benefits of a steady growth in the national economy. Grant (1973, 3) has calculated that over the period 1959-60 to 1970-71 personal income per head of mean population in Hobart rose by 43 percent in terms of real prices. Table 3.2 provides a comparable estimate of the rate of growth of real income. Personal income per head of mean population rose from $599.10 in 1960-61 to $1145.29 in 1970-71. At the same time the increase in the consumer price index between 1961 and 1971 rose 31.85 percent (C.B.C.S., 1973a, 556) so that personal income per head of mean population in 1960-61 prices was $868.63 representing a 44.99 percent increase in income per head in constant prices over the ten year period, that is, an annual growth, on average, of 4.5 percent.

TABLE 3.2

GROWTH IN PERSONAL INCOME[a] - TASMANIA - 1960/61-1970/71

Year	Total Taxable Income for Tasmania	Population of Tasmania[3]	Mean Taxable Income per Capita	Consumer Price Index[4]	Taxable Income in Constant Dollars[b]
1960/61	209,889,000[1]	350,340	$ 599.10	471	$599.10
1970/71	446,520,000[2]	389,874	$1145.29	621	$868.63
Percentage Increase 1960/61 - 1970/71			91.17	31.85	44.99

Notes

(a) 'Personal Income' may be defined more precisely as 'mean taxable income per capita'; a statistic which may be regarded as a realistic approximation to the disposable income likely to affect patterns of spending. This is derived by the formula

$$PI = \frac{t}{p}$$

where PI represents personal income, t represents total taxable income and p represents the total population of Tasmania.

(b) For formula for 'constant' dollars see Appendix A.

Source of Data

(1) Commissioner of Taxation (1963). 99-100.

(2) Commissioner of Taxation (1973). 65-66.

(3) C.B.C.S., (1973a). 155

(4) C.B.C.S., (1973a). 556

Throughout the western world increasing real income has had the effect of disturbing patterns of expenditure which, in turn, have had a marked impact upon the retail structure of cities, inducing changes in scale, costs, diversification and specialization of location (Holton, 1960; Vance, 1962, 486; Simmons, 1964; Berry, 1963, 167; Beed, 1963, 106; Johnston and Rimmer, 1969, 23). In Hobart growth of scale has led to product differentiation on the part of individual establishments and at the same time has permitted both commodity and locational specialization. Increasing market size and purchasing power has encouraged growth of both the larger department and variety stores, and the proliferation of smaller more specialized stores, especially women's accessory stores, women's clothing stores, tailors, camera suppliers, and electrical appliance stores in the CBD (Free, 1970, 19), for as the size of market increases so does the number of atypical customers, to the point where new specialized functions can enter to satisfy these consumers. On the other hand, increasing real income has also produced a market for standard brand, mass appeal goods which derive no advantage from a CBD location.

III.4. Trends in Consumer Spending

As real incomes increase changes take place in consumer preferences and taste. New kinds of products and services emerge in response to these changes. Initially these goods and services are to be had only in the central shopping district which commands the widest possible market, but with mass production, mass advertising, and mass selling standardization is achieved, and those products which come within the purchasing power of the masses and are in frequent demand may be sold in suburban shopping districts. Spread of purchase-credit schemes and the general rise of hire-

-purchase operations in recent years have made it easier for suburban retailers to compete more readily with the larger organizations of the CBD in standardized lines. But to supplant the central shopping district the suburban shopping centre would need to approach the CBD's variety and selection (Jonassen, 1955, 8), a difficult task in a medium sized city such as Hobart because of the limited purchasing power in peripheral areas of the city. Thus with increasing affluence the demand for new and more highly specialized products continues and the central shopping district continues to dominate this sector of the market (Vance, 1962, 486; Berry, 1963, 163). Consumer behaviour is by no means uniform. Whereas the large selection of goods available in the central shopping district is regarded by the majority of shoppers as the most important advantage that the CBD has to offer, this attraction is, in general, more important to the upper income group, and to women, who represent about 80 percent of shoppers (Jonassen, 1955, 63).

A general guide to trends in consumer spending in Hobart may be derived from changes in the Commonwealth Bureau of Census and Statistics consumer price index (C.B.C.S., 1967, 452 and C.B.C.S., 1973a, 556 - 557). This is essentially an estimated pattern of consumption for the six capital cities combined, and is designed to indicate the percentage weighting of components in a wide range of consumer goods, such as food, clothing and drapery, housing, household supplies and equipment, and a variety of goods and services. Increase in the weight of a commodity from one period to another is compensated for by relative decrease in the weight of other commodities, so that changes in weight, shown in percentages, indicate relative variation in the price and/or consumption of listed commodities.

Caution needs to be exercised when using these data to indicate trends, for several assumptions need to be made which are not absolutely correct. First, it is assumed that the consumer price index for Hobart is typical of the combined index for the six State capital cities. In fact, the personal income per head of mean population in Tasmania in 1970-71 was only about 90 percent that of Australia as a whole (Grant, 1973, 9) and this would lead one to surmise that a consumer price index for Hobart would show a greater weight in essential convenience goods such as food and a smaller weight on luxury consumer goods. Second, it is assumed that, although prices and incomes have both risen, comparative prices have remained stable. In fact this has not been the case. The greatest increases appear to be in those goods and services where labour is a major item in production costs. For example, the cost of home repairs and maintenance have risen 66.6 percent over a five year period. Third, it is assumed that the list of items that makes up the consumer price index has remained unchanged. In fact two items, namely, 'private owned flats' and 'health services', accounting for about 6 percent of listed items, appear in 1968 for the first time. Inclusion of these would have had a relatively insignificant effect on the other 42 items, reducing each by about 0.13 percent. Inclusions in the past have given a pointer to changes in consumer behaviour. For instance, the advent of the private motor vehicle is marked by inclusion of 'private motoring' in the index in 1952, and the inclusion of 'television' in 1960, and 'household heating oil' in 1968 indicate the dates by which these innovations have reached such wide usage as to be regarded as 'normal' consumer items. Notwithstanding these difficulties, comparison of the composition and weighting of the most recent consumer

price index with indices of earlier periods allows identification of general trends.

TABLE 3.3

CONSUMER PRICE INDEX

COMPOSITION AND WEIGHTING PATTERN AS AT DECEMBER QUARTER, 1963 AND 1968

FOR THE SIX STATE CAPITAL CITIES COMBINED

Group, Section, etc.	1963[1] Percentage Weight Section, etc.	1963[1] Percentage Weight Group	1968[2] Percentage Weight Section, etc.	1968[2] Percentage Weight Group	Percentage Change 1963-1968 Section	Percentage Change 1963-1968 Group
Food -						
Cereal Products - Bread, flour, biscuits, rice and breakfast foods	4.0)		4.1)		+2.50)	
Dairy Produce - Milk, cheese, butter and eggs	7.1)		6.0)		-15.49)	
Potatoes, Onions, Preserved Fruit and Vegetables - Potatoes and onions, canned and dried fruits, and canned and frozen vegetables	1.9)		2.7)		+42.11)	
Soft Drink, Ice Cream and Confectionery	4.0)	32.1	4.3)	31.3	+7.50)	-2.49
Other (except Meat) - Sugar, jam, margarine, tea, coffee, baby foods, and sundry canned and other foods	4.1)		3.3)		-19.51)	
Meat - Butchers' (Beef, mutton, lamb and pork)	9.1)		8.4)		-7.69)	
Processed (Bacon, smallgoods and canned meat)	1.9)		2.5)		+31.58)	
Clothing and Drapery -						
Men's Clothing	4.1)		3.6)		-12.20)	
Women's Clothing	6.5)		5.0)		-23.08)	
Boys' Clothing	0.6)		0.6)		.00)	
Girls' Clothing	1.0)		0.8)		-20.00)	
Piecegoods, etc. - Wool, cotton and rayon cloth, nursery squares and knitting wool	1.0)	16.9	0.8)	14.1	-20.00)	-16.57
Footwear - Men's, women's and children's	2.7)		2.5)		-7.41)	
Household Drapery - Bedclothes, towels, tablecloths, etc.	1.0)		0.8)		-20.00)	
Housing -						
Rent - Privately owned houses	2.8)		2.1)		)	
Government owned houses	0.8)		0.9)		+12.50)	
Privately Owned Flats	)		3.1)		)	
Home Ownership - House Price	5.2)	12.6	3.4)	14.2	)	+12.70
Rates	2.6)		2.7)		+3.85)	
Repairs and Maintenance	1.2)		2.0)		+66.67)	
Household Supplies and Equipment -						
Fuel and Light - Electricity	2.4)		2.4)		.00)	
Gas	1.3)		1.0)		-23.08)	
Other (Firewood and Kerosene)	0.9)		0.6)		-33.33)	
Household Appliances - Refrigerator, washing machine, stove, radio set, television set, vacuum cleaner, electric iron, etc.	3.6)		2.6)		-27.78)	
Other Household Articles	)	14.5	)	12.5	)	-13.79
Furniture and Floor Coverings	2.2)		1.9)		-13.64)	
Kitchen and Other Utensils, Gardening and Small Tools	0.9)		0.7)		-22.22)	
Household Sundries (Household soaps, etc.)	1.0)		1.0)		.00)	
Personal Requisites (Toilet soap, cosmetics, etc.)	1.1)		1.2)		+9.09)	
Proprietary Medicines	1.0)		0.9)		-10.00)	
School Requisites	0.1)		0.2)		+100.00)	
Miscellaneous -						
Transport - Fares - Train	1.2)		1.0)		-16.67)	
Tram and bus	1.9)		1.5)		-21.05)	
Private Motoring - Car purchase	3.0)		3.4)		+13.33)	
Car operation	4.4)		5.8)		+31.82)	
Tobacco and Cigarettes	3.9)		3.6)		-7.69)	
Beer	3.8)		3.7)		-2.63)	
Services - Health (Dentist, Doctor, Hospital)	)	23.9	3.3)	27.9	)	+16.74
Hairdressing	0.7)		0.7)		.00)	
Drycleaning	0.5)		0.5)		.00)	
Shoe repairs	0.3)		0.2)		-33.33)	
Postal and telephone services	0.9)		1.1)		+22.22)	
Other - Radio and television operation	1.3)		1.1)		-15.38)	
Cinema admission	0.7)		0.8)		+14.29)	
Newspapers and weekly magazines	1.3)		1.2)		-7.69)	
TOTAL	100.0	100.0	100.0	100.0		

Source of data

(1) C.B.C.S., (1967). 452.

(2) C.B.C.S., (1973a). 556-557.

Table 3.3 gives the consumer price index for 1963 and 1968 and shows the percentage change in weight for each commodity in that five year period. From this it may be seen that while the percentage spent on food has remained fairly constant at about 31 - 32 percent, consumers are spending relatively more on housing, and miscellaneous goods and services, and rather less on clothing and drapery, and household supplies and equipment. So far as individual commodities are concerned it may be seen that at the same time as the percentage spent on dairy produce, butchers meat, sugar, jam and other manufactured foods dropped, there was a compensating rise in cereal products, vegetables and processed meat, so that the overall percentage has remained fairly constant. Substantial increases are to be seen, however, in the processed foods such as canned and dried fruit, frozen vegetables, bacon, smallgoods and canned meat, suggesting a change in living style with increased emphasis upon mass produced ready prepared foods. In spite of these changes the overall impression, when spending on food is compared with spending in other categories, is that of relative inelasticity of demand.

There was a relative decline in all items of clothing and drapery giving an overall drop of 16.5 percent over the five year period. The most substantial decline was in women's and girls' clothing and woollen, cotton and rayon piece goods. In view of steadily rising real incomes, an increasing proportion in the labour force, the absence of economic recession and the proliferation of women's fashion houses (Free, 1970, 19) during this period, the downward trend appears to suggest a decline in the cost of mass produced manufactured goods. Similarly, manufactured goods in the category 'household supplies and equipment' show a 13.8 percent decline over the five year period. While the percentage of income

spent on electricity remained constant, electrical household appliances dropped 27.8 percent, and kitchen and other utensils dropped 22.2 percent. Again, a decline in the cost of manufactured goods, rather than a decline in consumption, appears to explain the drop. Two other indicators of rising affluence are an increase in the proportion spent on personal requisites such as toilet items, cosmetics etc. and school requisites. Against this trend is the overall increase of 12.7 percent in the cost of housing, with rent for government owned houses up the average rate for this category, but with costs of repairs and maintenance for home owners up 66.6 percent.

An interesting demonstration of the combined effect that increasing affluence and increasing labour costs have had on consumer preference is indicated by a drop of 33.3 percent in spending on shoe repairs. Given the choice, consumers prefer to buy new shoes rather than spend money on expensive repairs.

The percentage of income spent on the basic categories of food, clothing, and housing has dropped in the five years from 76.1 percent to 72.1 percent, resulting in a 4 percent increase in expenditure on miscellaneous items. Had this been distributed evenly over the 14 items in this category it would have led to a comparatively insignificant overall increase. In fact, the miscellaneous category shows some of the most marked and significant changes in consumer behaviour. By far the most important change, so far as both the consumer and the supplier are concerned, was the continuing trend towards increasing consumer mobility. Not only has the percentage spent on all transport risen from 10.5 percent to 11.7 percent of the total consumer price index, but at the same time there has been a decline in the percentage spent on

public transport, and a substantial increase in the percentage spent on the purchase and operation of private vehicles. In the five year period spending on private transport rose from 70.48 percent to 78.63 percent of the total spent on transport.

Increasing affluence has led to widespread improvement in radio, television and telephone communication which, in turn, has reduced the need for consumer and supplier to make face-to--face contact in the search and purchase process. The consumer price index shows that the cost of operating radio and television, two of the chief means of advertising, dropped in relation to other commodities. Newspapers also showed a drop in relation to other commodities. On the other hand, the substantial increase in spending on postel and telephone services reflects a great improvement in level of telephone communication. In the four year period, 1967 to 1971, the number of telephones per 100 population in Australia rose from 26.7 to 32.27, an increase of 5 percent per annum (C.B.C.S., 1972a, 128 and 376). The effect has been to free mass appeal goods from a central location and thereby encourage decentralization of this type of commodity.

Confirmation that Tasmanian trends in consumer spending follow those of Australia as a whole may be had by examination of the 'estimated value of retail sales of goods by commodity groups' given in Tasmanian Year Books of the Commonwealth Bureau of Census and Statistics (C.B.C.S., 1967, 560 and C.B.C.S., 1973a, 349). In all commodity groups expenditure in dollars has increased over the years, but comparison of consumer patterns is made difficult by the changing value of the dollar. Some geographers avoid the problem of changing money value by percentaging the data (Beed, 1961, 2; and Johnston & Rimmer, 1969, 24). Table 3.4 shows the

percentage value of retail sales of goods by commodity groups to provide a basis of comparison. As would be expected this data confirms the trend towards increasing expenditure on non-essential goods, though it is neither possible to infer from table 3.4 real growth in demand resulting from population growth and growth in real income per capita, nor is it possible to identify any real decline in value of goods over the years.

TABLE 3.4

PERCENTAGE VALUE OF RETAIL SALES OF GOODS BY COMMODITY GROUPS : TASMANIA

1960-61 AND 1970-71

Commodity Group	1960-61[1]		1970-71[2]		Percentage Change 1960-61 - 1970-71	
Groceries	12.9)		12.0)		-6.98)	
Butchers' Meat	6.3)	28.30	5.7)	26.00	-9.52)	-8.13
Other Food	9.1)		8.3)		-8.79)	
Beer, Wine, Spirits	7.7		8.2		-6.49	
Clothing, Drapery, Piece Goods	13.7)		12.6)		-8.03)	
Footwear	2.3)	16.00	2.0)	14.6	-13.04	-8.75
Domestic Hardware	1.9)		1.7)		-10.53)	
Electrical Goods	5.0)	10.30	3.6)	8.80	-28.00)	-14.56
Furniture, Floor Coverings	3.4)		3.5)		+2.94)	
Chemists Goods	3.1)		3.8)		+22.58)	
Newspapers, Periodicals, etc.	)		)		)	
Other Goods[a]	2.4)	13.20	2.7)	13.80	+12.50)	+4.55
	7.7)		7.3)		-5.19)	
Motor Vehicles, Parts, Petrol	24.7		28.6		+15.79	
TOTAL	100		100			

(a) Includes sports goods, jewellery, cycles, flowers, plants, etc.

Source of data

(1) C.B.C.S., (1967). 560.

(2) C.B.C.S., (1973). 349.

TABLE 3.5

ESTIMATED VALUE OF RETAIL SALES OF GOODS BY COMMODITY GROUPS

TASMANIA

1960-61 AND 1970-71

(in millions of constant dollars[a])

Commodity Group	1960-61[1] $		1970-71[2] $		Constant $'s		Percentage Change 1960-61 - 1970-71	
Groceries	28.0)		(44.8)		33.98)		21.36)	
Butchers' Meat	13.6)	61.4	(21.1)		16.00)	73.57	17.65)	19.82
Other Food	19.8)		(31.1)		23.59)		19.14)	
Beer, Wine, Spirits	16.6		(30.6)		23.21		39.82	
Clothing, Drapery, Piece Goods	29.7)		(46.9)		35.57)		19.76)	
Footwear	5.0)	34.7	(7.5)		5.69)	41.26	13.80)	18.90
Domestic Hardware	4.1)		(6.3)		4.78)		16.59)	
Electrical Goods	10.8)		(13.5)		10.24)		-5.19)	
Furniture, Floor	)	22.2	)		)	24.96	)	12.43
Coverings	7.3)		(13.1)		9.94)		36.16)	
Chemists' Goods	6.8		(14.3)		10.85		59.56	
Newspapers, Periodicals	5.2		(10.0)		7.58		45.77	
Other Goods	16.6		(27.1)		20.55		23.80	
Motor Vehicles, Parts, Petrol	53.5		(106.7)		80.93		51.27	
TOTAL	216.9		(373.0)		282.91	(71.97)	30.43	

Notes

(a) The consumer price index rose 31.85% between 1961 and 1971 (C.B.C.S., 1973a, 556). For formula for constant dollars see Appendix A.

Sources of data

(1) C.B.C.S., (1967). 560.

(2) C.B.C.S., (1973a). 349.

A clear picture of overall growth in demand on the one hand, coupled with changes in patterns of spending on the other, is made possible by employing the concept of constant dollars. In the ten-year period 1960-61 to 1970-71 the estimated value of retail sales rose from 217 million dollars to 283 million constant dollars, an increase of 30 percent (Table 3.5). This is attributable, in part, to an increase of 10.41 percent in population and, in part, to an increase of 45 percent in real income per head of population. The only commodity group to show a decline in value of sales was 'electrical goods' where a drop of 5 percent was noted. A survey carried out among electrical wholesalers and retailers in Hobart revealed that the point had long since been reached when refrigerators, television sets and other electrical goods were considered to be essential to the Australian way of life, that demand had remained firm throughout the period under consideration, and that there had been a steady increase in volume of sales.

When invited to suggest a reason for the fall in value of electrical goods at a time when volume of sales was increasing, retailers of electrical goods without exception claimed that competition was keener in the electrical business than in any other type of retailing. The small family firm had found it increasingly difficult to compete with the major department stores whose volume of business allowed them to negotiate more favourable terms for bulk orders from manufacturers. Electrical firms with peripheral locations in the CBD had dropped the electrical side of the business in favour of other lines, while those in the main block claimed to have a volume of trade that compared favourably with the nearby department stores, and this allowed them to offer their goods at competitive prices. It was common for small firms to form buying

groups to take advantage of bulk buying from manufacturers. It was widely claimed, however, that competition between retailers was cutthroat, with consumers shopping around for the lowest price for standard brand goods. Small firms specializing in electrical goods claimed to have the reputation of providing superior after--sales service and regarded this as a marked advantage in their favour.

Competition alone, no matter how fierce, could not account for a real decline in value of retail sales of electrical goods at a time when there was a substantial increase in volume of sales. In the three year period 1966-67 to 1969-70, when the population of Australia grew by 6 percent, the production of non--essential electrical goods such as television sets and radios rose by 26 percent and 62 percent, and household items such as washing machines, electric radiators and stoves rose by 37 percent, 19 percent and 15 percent respectively (O'Neill, 1972, 728-732). The explanation lies very largely in the revolutionary changes that the manufacturing industry and especially the electrical industry have undergone in the past two decades. During this time the increasing purchasing power of a growing and more affluent population has produced a market large enough to take advantage of mass production techniques. Capital and technology have been introduced from Britain, the United States and Japan, and tariffs have been 'developed in conformity with the policy of protecting economic and efficient Australian industries' (C.B.C.S., 1972, 283). In addition government assistance in the form of subsidies and bounties designed to encourage the growth of vital but uneconomic industries and to initiate industrial research and development have led to the development of a highly efficient manufacturing industry in Australia.

Evidence of the growing efficiency of the Australian manufacturing industry may be seen in the Commonwealth Bureau of Census and Statistics data for the four year period 1963-64 to 1967-68 (C.B.C.S., 1972, 719). At a time when the population of Australia was growing at the rate of 2.0 percent per annum, employment in the manufacturing industry grew by 2.5 percent, value of materials and fuel used rose by 7.8 percent, salaries in the industry increased by 9.6 percent, value of plant and machinery grew by 10.6 percent, indicating an increasing emphasis on mechanization and automation, and production grew by 10.3 percent. Furthermore, the size and output of manufacturing units increased with amalgamation or take-over of smaller less efficient firms, as indicated by a growth of only 1.5 percent in number of factories in that time. The consumer has reaped considerable benefit from the growing efficiency of the electrical industry with reduction in the price of goods, as illustrated by the following examples. At the end of World War II an 8 cubic foot refrigerator sold for £187 (about $560 in current prices). Today an 11 cubic foot self-defrosting refrigerator sells for $200. When television was first introduced to Australia a set sold for about £220 (about $580 in current prices). Today it would sell for $180. In both instances the items now sell for about 35 to 40 percent of their initial cost.

Similar benefits have been enjoyed by consumers of other manufactured goods, so that increases in the value of retail sales in clothing, shoes, domestic hardware etc. shown in Table 3.5 indicate appreciable increases in demand in both quantity and variety. At the same time significant changes in purchasing patterns may be identified. These features of consumer behaviour are most clearly

seen when one compares per capita value of retail sales of goods by commodity groups, as shown in Table 3.6. Over the ten year period an 18.0 percent increase in overall demand per head of population was recorded, with food, clothing, footwear, and domestic hardware goods rising, but at a slower than average rate. Expenditure on less essential commodities such as newspapers and periodicals, alcoholic beverage, and furniture and floor coverings rose at somewhat above average rates, and demand for chemists goods and motor vehicles rose at more than twice the average per capita rate.

TABLE 3.6

ESTIMATED PER CAPITA VALUE OF RETAIL SALES OF GOODS BY COMMODITY GROUPS - TASMANIA - 1960-61[a] AND 1970-71[b]

(in constant dollars[c])

Commodity Group	1960-61[1] $		1970-71[2] $		Percentage Change 1960-61 - 1970-71	
Groceries	79.32		87.17		9.90	
Butchers" Meat	38.53	173.94	41.05	188.74	6.54	8.51
Other Food	56.09		60.52		7.90	
Beer, Wine, Spirits	47.03		59.54		26.60	
Clothing, Drapery, Piece Goods	84.14		91.26		8.46	
Footwear	14.16	98.30	14.59	105.85	3.04	7.68
Domestic Hardware	11.61		12.26		5.60	
Electrical Goods	30.59	62.88	26.27	64.02	-14.12	1.81
Furniture, Floor Coverings	20.68		25.49		23.26	
Chemists' Goods	19.26		27.83		44.50	
Newspapers, Periodicals	14.73		19.46		32.11	
Other Goods	47.03		52.73		12.12	
Motor Vehicles, Parts, Petrol	151.56		207.62		36.99	
TOTAL	614.73		725.79		18.07	
MEAN POPULATION	353,014[3]		389,768[3]		10.41	

Note

(a) 1960-61 per capita value of retail sales of goods was computed using the formula

$$V = \frac{S}{P}$$

where V = estimated per capita value of retail sales for the commodity,
S = sales in dollars for that commodity, and
P = mean population of Tasmania in 1960-61.

(b) 1970-71 per capita value of retail sales of goods in constant prices was computed using the formula

$$V = \frac{S}{P} \times \frac{100}{(I+100)}$$

where V = estimated per capita value of retail sales for the commodity in 1960-61 prices,
S = sales in 1970-71 dollars for that commodity,
P = mean population of the State in 1970-71, and
I = percentage increase in the period 1960-61 to 1970-71, that is, 31.85.

(c) For formula for constant dollars see Appendix A.

Source of data

(1) C.B.C.S., (1967). 560.
(2) C.B.C.S., (1973a). 349.
(3) C.B.C.S., (1973a). 155.

III.5. The Effect of Demographic Changes upon the Distribution of Retailing in Hobart Metropolitan Area

Generally, it has been found that demographic factors "explain" variations in retail sales characteristics from city to city better than any other single factor. In the United States Boyce and Clark (1963, 170) found that Metropolitan Area population provided the single highest relationship to amount of CBD sales and to percentage of Metropolitan Area sales in the CBD. He found a coefficient of determination (r^2) of 70 percent in the case of absolute sales, and 50 percent for the percentage of Metropolitan Area sales in the CBD. Johnston (1965, 381) similarly found, when he made a study of sales in Australian Central Business Areas: 1956-57 - 1961-62, that variation in size of Metropolitan Area population "explained" between 83 percent and 90 percent of the variation in the percentage of total sales in the Central Business Areas and between 81 percent and 88 percent of the variation in the coefficient of specialization.

Hobart's central shopping district, like those of other Australian capital cities, is undergoing rapid change in response to a wide variety of factors including increase in size of population, changing tastes and behaviour patterns, increasing consumer mobility, declining standards of public transport, increasing city congestion, lack of inner city parking, and changing retail technology and patterns of supply. For many of these, data of the kind which would allow thorough explanatory analysis is simply not available at present. Data from the Australian Bureau of Statistics on population and retail establishments, however, provide a clear picture of the general trends that are taking place in Australian CBD's. These are examined in some detail on the assumption that trends on a national level provide insight into trends

affecting the central shopping district of Hobart.

During the twelve year period from 1956-57, when for the first time Economic Censuses covered details of sales data for "Inner City Areas" in addition to "Metropolitan Areas", to 1968-69, when the most recent Economic Census was undertaken, the population of Australian State capitals grew at an average rate of 3.65 percent per annum (Table 3.7). Hobart's rate of growth (3.75 % p.a.) was close to the national average, and comparatively minor differences in standards of living, consumer mobility, retailing technology, etc. existed on a regional basis during this period so that, on aggregate, the forces at work were similar in all State capitals.

Simple regression analysis allows the identification of the general form of relationships between population and retailing characteristics of Australian state capitals. From these it is possible to predict certain changes in the role of the CBD in the retail structure of the Hobart metropolitan area. Tables 3.7 to 3.25 show stages of transformation and statistical manipulation of data leading to simple regression analysis, tests of significance and ultimately to the prediction model.

Perfect relationships between the various combinations of variables are not expected because of data discrepancies. A brief outline of the data difficulties is included here to give an appreciation of the degree of confidence that can be placed upon the relationships. It may be seen from Table 3.7, which provides population data for the Metropolitan Areas of Australian State capital cities, that at the 1966 Census new methods were used in the delimitation of metropolitan centres. These were designed to give a more realistic measure of city size and when applied retrospectively to 1961 Census data discrepancies of between 5.5 per-

cent and 13.3 percent were found. When compared with Metropolitan Area retail sales, Inner City Area sales, and percentage of Metropolitan Area retail sales in the Inner City Area these adjusted population data for 1961 yield correlation coefficients (r) of 0.99, 0.97 and 0.88 respectively (Tables 3.11, 3.14, 2.21). A clearer picture of trends may be seen by comparing variables over a longer period than five years, and for this reason the 1961-62 data are not shown by means of regression lines.

TABLE 3.7

POPULATION GROWTH OF AUSTRALIAN STATE CAPITAL CITIES - 1956-1968

Metropolitan Area	Population[1] ('000)				Annual Percentage Increase		
	1956	1961	1961(a)	1968	1956-1961	1961(a)-1968	1956-1968
Sydney	1949	2183	2304	2647	2.40	2.13	2.98
Melbourne	1629	1912	1985	2320	3.47	2.41	3.53
Brisbane	528	622	693	813	3.56	2.47	4.50
Adelaide	518	588	659	794	2.70	2.93	4.44
Perth	372	420	476	606	2.58	3.90	5.24
Hobart	100	116	130	145	3.20	1.65	3.75
State Capitals	5096	5841	6247	7325	2.92	2.47	3.65

Notes

(a) At the Census of 1966 new methods were used in the delimitation of metropolitan centres. Around each metropolitan area a boundary was defined, designed to circumscribe an area which would contain the urban development of that centre for at least twenty years. These were designated statistical divisions in the case of capital cities. Populations at the 1966 Census and subsequent years are shown for the new capital city statistical divisions. In this table figures for 1961 are given both for the old method and for the revised method to facilitate comparison with earlier and later periods.

Source

(1) C.B.C.S., (1973g). 14.

TABLE 3.8

RETAIL SALES IN METROPOLITAN AND INNER CITY AREAS OF AUSTRALIAN CITIES - 1956-57, 1961-62 AND 1968-69

		Retail Sales ($'000)			Annual Percentage Change		
		1956-57	1961-62	1968-69	1956-57 - 1961-62	1961-62 - 1968-69	1956-57 - 1968-69
Sydney	I.C.A.	165 235[1]	162 085[1]	299 686[7]	-0.38	12.13	6.78
	M.A.	605 200	805 834	2 826 133	6.63	35.82	30.58
	%	27.30	20.11	10.60			
Melbourne	I.C.A.	139 178[2]	141 067[2]	352 167[8]	0.27	21.38	12.75
	M.A.	513 724	669 533	2 453 769	6.07	38.07	31.47
	%	27.09	21.07	14.35			
Brisbane	I.C.A.	69 411[3]	71 644[3]	172 280[9]	0.64	20.07	12.35
	M.A.	157 324	198 680	762 863	5.26	40.57	32.07
	%	44.12	36.06	22.58			
Adelaide	I.C.A.	83 665[4]	91 581[4]	250 031[10]	1.89	24.72	16.57
	M.A.	164 561	199 845	752 902	4.29	40.25	30.30
	%	50.84	45.83	33.21			
Perth	I.C.A.	45 239[5]	51 163[5]	143 417[11]	2.62	25.76	18.09
	M.A.	121 768	162 671	696 903	6.72	46.92	39.36
	%	37.15	31.45	20.58			
Hobart	I.C.A.	22 591[6]	23 190[6]	62 154[12]	0.53	24.00	14.59
	M.A.	36 364	45 237	154 333	4.88	34.45	27.03
	%	62.12	51.26	40.27			
All State Capitals	I.C.A.	87 553	90 122	213 289	0.59	19.52	11.97
	M.A.	266 490	346 967	1 274 483	6.04	38.19	31.52
	%	32.85	25.97	16.74			

Sources

(1) C.B.C.S., (1964a).
(2) C.B.C.S., (1964b).
(3) C.B.C.S., (1964c).
(4) C.B.C.S., (1964d).
(5) C.B.C.S., (1964e).
(6) C.B.C.S., (1964f).
(7) C.B.C.S., (1973f). Table 14, 66.
(8) A.B.S. (1974c). Table 2.
(9) A.B.S. (1974e). Table 2.
(10) A.B.S. (1974g). Table 2.
(11) A.B.S. (1974h). Table 2.
(12) C.B.C.S., (1973d). Table 2

TABLE 3.9

RETAIL SALES IN METROPOLITAN AND INNER CITY AREAS OF AUSTRALIAN CITIES IN CONSTANT DOLLARS[a]

City		Retail Sales in Constant Dollars ($'000) 1956-57	1961-62	1968-69	Annual Percentage Change 1956-57 - 1961-62	1961-62 - 1968-69	1956-57 - 1968-69
Sydney	I.C.A.	165 235	144 191	229 135	-2.55	8.42	3.22
	M.A.	605 200	716 870	2 160 817	3.69	28.77	21.42
Melbourne	I.C.A.	139 178	125 493	269 261	-1.97	16.37	7.79
	M.A.	513 724	595 617	1 876 114	3.19	30.71	22.10
Brisbane	I.C.A.	69 411	63 735	131 723	-1.64	15.24	7.48
	M.A.	157 324	176 746	583 273	2.47	32.86	22.56
Adelaide	I.C.A.	83 665	81 471	191 170	-0.52	19.24	10.71
	M.A.	164 561	177 782	575 657	1.61	31.97	20.82
Perth	I.C.A.	45 239	45 515	109 654	0.12	20.13	11.87
	M.A.	121 768	144 712	532 844	3.77	38.32	28.13
Hobart	I.C.A.	22 591	20 630	47 522	-1.72	18.62	9.20
	M.A.	36 364	40 243	118 001	2.13	27.60	18.71
All State Capitals	I.C.A.	87 553	80 173	163 077	-1.69	14.77	7.19
	M.A.	266 490	308 662	974 451	3.16	30.81	22.14

Notes

(a) The concept of constant dollars involves the conversion of later values to earlier values by the formula

$$C = \frac{V \times 100}{I + 100}$$

where C represents the earlier or constant value,
V represents the later value, and
I represents the percentage increase in the Retail Price Index from the earlier to the later period.

(b) The Retail Price Index for the six capital cities combined were:

Year	R.P.I.	% Increase
1956	419	0
1961	471	12.41
1968	548	30.79

For values of the Retail Price Index see Lakin (1974, 563).

Source

Calculated from data in Table 3.8.

Several problems arise when dealing with retail sales. First, there is the problem of dealing with the changing value of money. This was solved by employing the concept of constant dollars (see Appendix A for formula). Second, although the definition of retail trade adopted in all three censuses under consideration was the same, that is, the sale of new and used goods to the final consumer for household and personal purposes, sales of building materials, timber, commercial refrigerators and freezers, business machines, agricultural machinery and implements, agricultural tractors, construction and earthmoving machinery and equipment, and grain feed and fertilizers were omitted although these could play a fairly important role in the commerce of a small city.

Third, the Inner City Areas appear to have been delimited on a fairly subjective basis and may therefore include more or less of the retail functions of the central shopping district although, as Johnston (1965, 380) points out, the Inner City Areas do include the central business districts defined by Scott (1959, 296). Fourth, the exact volume of Metropolitan Area retail sales will depend upon the position of the Metropolitan Area boundaries, and fifth, variations in the method of delimiting the boundaries of the Inner City Areas and the Metropolitan Areas will have a more marked effect where the two are combined to provide the percentage of the Metropolitan Area's retail sales in the Inner City Area. This may have contributed to the fact that, whereas variation in absolute dollar sales in the Inner City Area is related to about 90 percent of the variation in Metropolitan Area population size, variation in the percentage of Metropolitan Area sales in the Inner City Area is related to only 70 percent of the variation in Metropolitan Area population.

Sixth, delays in the publication of the Australian Bureau of Statistics bulletin on Retail Establishments and Selected Service Establishments, Part 2 - Industry and Commodity Details for Statistical Retail Areas for New South Wales meant that it was not possible to use 'Retail Sales By Commodity Item' (Part 2, Table 2) as in the case of all other states. Instead 'Total Retail Sales of Goods' (Part 1, Table 14) was used. Correspondence with the Deputy Commonwealth Statistician, New South Wales, in December, 1974, revealed that, when published, Part 2, Table 2 would reveal slightly higher retail sales in both the Inner City Area (2.38% higher) and Metropolitan Area (1.73% higher). This would mean that the proportion of Sydney's Inner City Area retail sales will be seen to be 10.67 percent of the Metropolitan Area's sales instead of the figure of 10.60% as shown in this study. This slight discrepancy will not have a significant effect on the relationship identified in the regression analysis which follows.

Data plotted on a scatter diagram showed that the relationship between variables was not that of a straight line expressed by the formula

$$Y = a \pm bX$$

where Y is the dependent variable, X is the independent variable, a is the base constant, and b is the regression coefficient. It was found that, since the relationships involved a constant rate of change in both the dependent and independent variables, the curvilinear relationships could be reduced to linear relationships by logarithmic transformation of both variables. Regression equations were therefore expressed in logarithmic form as

$$\log Y = a + b \log X,$$

and regression lines and variables were plotted on log-log graph paper.

It should be remembered that static models are being built upon dynamic data. Boulding's (1956, 109-24) first principle of structural growth reminds us that at any moment the form of the relationship between any two variables is the result of the laws of growth up to that moment. Different influences determining the form of relationships are at work at different times and the resultant structure sets the limits of subsequent growth (Winsborough, 1956, 109-24). Consequently it is not possible to predict that because a given relationship exists at one moment in time, exactly the same relationship will exist at a later period. Adjustments have to be made which take into account all the forces at work during the period in question. Similarly, each input of information may be in some stage of transition, and without knowing what stage has been reached it is not possible to predict precisely its future development. Nevertheless, in spite of the foregoing, certain clear trends may be identified.

III.5.a. Retail Sales

As one might expect, there is a highly significant correlation between Metropolitan Area retail sales and Metropolitan Area population (Tables 3.10, 3.11 and 3.12). In 1956-57, according to the regression equation (Table 3.10), a small city of 100 000, that is, the size of Hobart, could be expected to generate $35.21 million worth of retail sales, whereas a city of 1 000 000 would generate $314.63 million sales. The regression equation for 1968-69 (Table 3.12) shows that a city of 100 000 could be expected to generate $82.15 million worth of retail sales while a city of 1 000 000 could be expected to generate $791.95 million. The average annual increase for both cities over the 12 year period would have been about 12.5 percent (12.90 for the smaller, and 12.64 for the larger). In both instances 99 percent of the variation in

Metropolitan Area retail sales can be "explained" in terms of variation in Metropolitan Area population size. In the light of this evidence it might appear reasonable to postulate that amount of retail sales is a function of the size of the city, but it should be remembered that size of city is significant in explaining absolute retail sales only because other variables exist which are significant and which may be approximated in sum by such a surrogate. For instance, total income, number of motor vehicles and similar consumer goods could be equally significant.

TABLE 3.10

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR METROPOLITAN AREA RETAIL SALES[1] vs POPULATION[2] - 1956-57

City	Population ('000) X	M.A. Retail Sales ($million) Y	X Y	log X	log Y	log X log Y
Sydney	1 949	605.2		3.29	2.78	
Melbourne	1 629	513.7		3.21	2.71	
Brisbane	528	157.3		2.72	2.20	
Adelaide	518	164.5		2.71	2.22	
Perth	372	121.8		2.57	2.09	
Hobart	100	36.4		2.00	1.56	
ΣX ...	5 096	1 598.9	2 233 567.1	16.50	13.56	38.34
ΣX^2 ...	7 147 734	698 118.5		46.48	31.64	
$\bar{X}$ ...	849.33	266.48		2.75	2.26	
σ_X ...	750.94	233.25		0.47	0.45	

$$\log b = \frac{\Sigma \log X \log Y - \frac{\Sigma \log X \, \Sigma \log Y}{N}}{\Sigma \log X^2 - \frac{(\Sigma \log X)^2}{N}} = 0.9511$$

$$\log a = \log \bar{Y} - b \log \bar{X} = -0.3556$$

Regression Equation: $\log Y = -0.3555 + 0.9511 \log X$

$r = 0.9997$ $t = 81.63$ $\alpha < 0.001$

$r^2 = 0.9994$

$Sy = \sigma y \sqrt{(1-r^2)} = 5.7130$

Sources:

(1) See Tables 3.8 and 3.9.

(2) See Table 3.7.

TABLE 3.11

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR METROPOLITAN AREA RETAIL SALES[1] vs POPULATION[2] - 1961-62

City	Population ('000) X	M.A. Retail Sales ($million constant = 1956) Y	X Y	log X	log Y	log X log Y
Sydney	2 304	716.9		3.36	2.86	
Melbourne	1 985	595.6		3.30	2.77	
Brisbane	693	176.7		2.84	2.25	
Adelaide	659	177.8		2.82	2.25	
Perth	476	144.7		2.68	2.68	
Hobart	130	40.2		2.11	1.60	
ΣX ...	6 247	1 851.9	3 147 730.1	17.11	14.41	42.04
ΣX^2 ...	10 406 647	954 074.8		49.83	35.72	
$\bar{X}$ ...	1 041.17	308.65		2.85	2.40	
σ_X ...	883.46	276.58		0.46	0.47	

log b = 0.9128

log a = -0.2015

Regression Equation: log Y = -0.2015 + 0.9128 log X

r = 0.9982 t = 2.15 α = <0.1

r^2 = 0.9965

Sy = 16.5873

Sources

(1) See Tables 3.8 and 3.9.

(2) See Table 3.7.

TABLE 3.12

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR METROPOLITAN AREA RETAIL SALES(1) vs POPULATION(2) - 1968-69

City	Population ('000)	M.A. Retail Sales ($million constant = 1956)				
	X	Y	X Y	log X	log Y	log X log Y
Sydney	2 647	2 160.8		3.42	3.33	
Melbourne	2 320	1 876.1		3.37	3.27	
Brisbane	813	583.2		2.91	2.77	
Adelaide	794	575.7		2.90	2.76	
Perth	606	531.8		2.78	2.73	
Hobart	145	118.0		2.16	2.07	
ΣX ...	7 325	5 847.6	11 342 817.8	17.54	16.93	50.53
ΣX^2 ...	14 068 675	9 159 432.6		52.33	48.81	
$\bar{X}$ ...	1220.83	974.60		2.92	2.82	
σ_X ...	1012.53	831.9		0.46	0.46	

log b = 0.9841

log a = -0.0536

Regression Equation: log Y = -0.0536 + 0.9841 log X

r = 0.9982 t = 33.28 α = < 0.001

r^2 = 0.9964

Sy = 49.8915

Sources

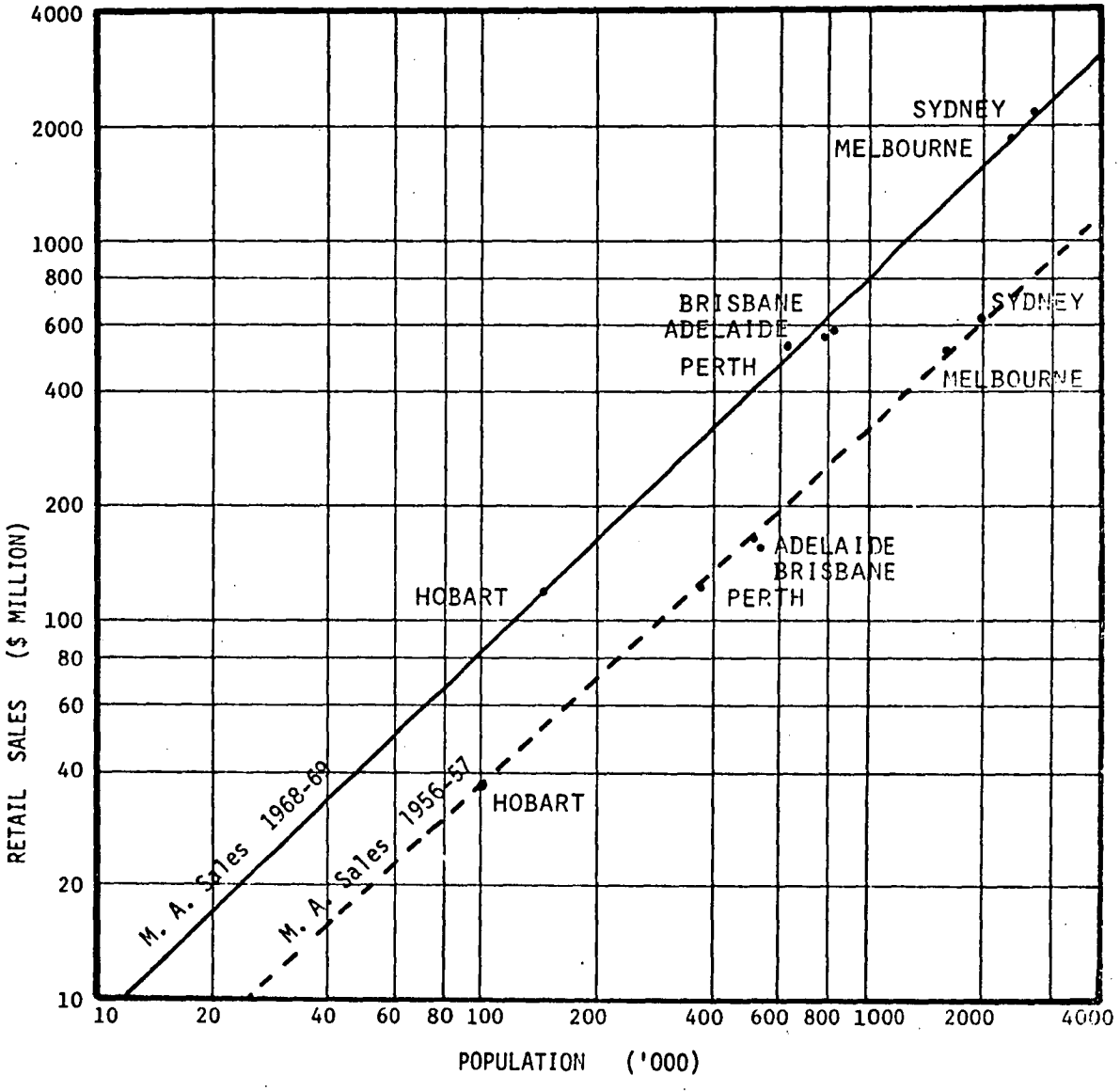
(1) See Tables 3.8 and 3.9.

(2) See Table 3.7.

If population were the only factor leading to growth of Metropolitan Area retail sales then Hobart's growth from 100 000 in 1956-57 to 145 000 in 1968-69 would have resulted in an increase in retail sales from $35.21 million to $50.14 million, that is, an average increase of 3.53 percent per annum, according to the 1956-57 regression equation (Table 3.10). In fact Hobart's total retail sales rose from $36.36 million in 1956-57 to $118.0 million in constant dollars in 1968-69 (Table 3.9). This represents an average annual growth of 18.71 percent, of which population growth would account for only 3.75 percent per annum. Growth in real income at the rate of about 4.5 percent per annum would account for part of the remaining difference, and hire purchase, personal credit and a variety of other factors would contribute to the rest of the difference. It is worth noting that, by and large, the two regression lines in Figure 3.1 have almost the same slope and are therefore almost parallel, suggesting that in sum the variables not associated with population growth affected equally the retail sales in all six State capitals.

METROPOLITAN AREA RETAIL SALES vs POPULATION

1956-57 AND 1968-69



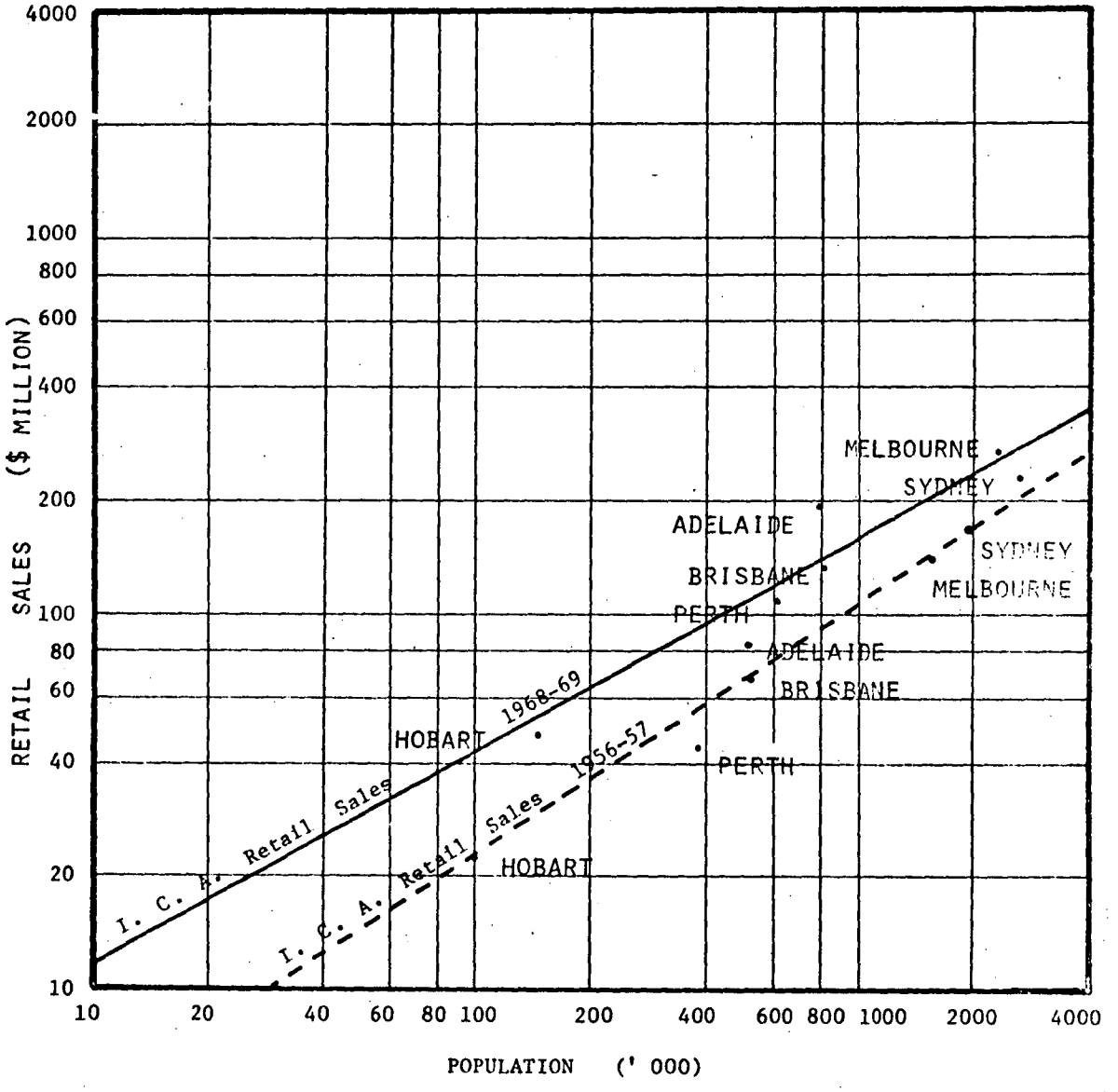
M. A. Retail Sales: 1956-57 - $\log Y = -0.3555 + 0.9511 \log X$ $r = 0.9997$

M. A. Retail Sales: 1968-69 - $\log Y = -0.0536 + 0.9841 \log X$ $r = 0.9982$

Figure 3.1

INNER CITY AREA RETAIL SALES vs POPULATION

1956-57 AND 1968-69



I.C.A. Retail Sales: 1956-57 - $\log Y = 0.0186 + 0.6696 \log X$ $r = 0.9788$

I.C.A. Retail Sales: 1968-69 - $\log Y = 0.4896 + 0.5686 \log X$ $r = 0.8885$

Figure 3.2

There is also a high degree of correlation between absolute Inner City Area retail sales and city population size. Tables 3.13, 3.14 and 3.15 show that for the three censuses 1956-57, 1961-62 and 1968-69 the correlation coefficients for these two variables were 0.98, 0.97 and 0.89, significant at the 0.001, 0.01 and 0.02 levels respectively. Figure 3.2 shows that Inner City Area retail sales increase with growth in Metropolitan Area population, although not at the same rate as Metropolitan Area retail sales. In 1956-57 the Inner City Area of a city of 100 000 could expect to generate about $22.78 million retail sales while the Inner City Area of a city of 1 000 000 would generate $106.51 million trade. In other words, the larger city, though 10 times the size of the smaller would generate only 4.7 times as much trade. In 1968-69 the Inner City Area of the city of 100 000 could be expected to generate $42.34 million retail sales compared with $156.82 million for the Inner City Area of the 1 million city. The larger, though 10 times the size of the smaller, would generate only 3.7 times as much trade as the smaller. In the twelve-year period 1956-57 to 1968-69 the absolute amount of retail sales, in constant dollars. rose by an average of 7.16 percent per annum in the Inner City Area of the smaller city while in the larger it would only have risen by 3.94 percent.

TABLE 3.13

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR INNER CITY AREA RETAIL SALES (1) vs POPULATION (2) - 1956-57

City	Population ('000)	I.C.A. Retail Sales ($million)				
	X	Y	X Y	log X	log Y	log X log Y
Sydney	1 949	165.2		3.29	2.22	
Melbourne	1 629	139.2		3.21	2.14	
Brisbane	528	69.4		2.72	1.84	
Adelaide	518	83.7		2.71	1.92	
Perth	372	45.2		2.57	1.66	
Hobart	100	22.6	647 805.8	2.00	1.35	31.35
ΣX ...	5 096	525.3		16.50	11.13	
ΣY^2 ...	7 147 734	61 043.5		46.48	21.16	
$\bar{X}$ ...	849.33	87.55		2.75	1.86	
σ_X ...	750.94	54.87		0.47	0.32	

log b = 0.6696

log a = 0.0186

Regression Equation: log Y = 0.0186 + 0.6696 log X

r = 0.9788 t = 9.5577 α = < 0.001

e^2 = 0.9580

Sy - 11.2384

Sources

(1) See Tables 3.8 and 3.9.

(2) See Table 3.7.

TABLE 3.14

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR INNER CITY AREA RETAIL SALES[1] vs POPULATION[2] - 1961-1962

City	Population ('000) X	Retail Sales ($million constant = 1956) Y	X Y	log X	log Y	log X log Y
Sydney	2 304	144.2		3.36	2.16	
Melbourne	1 985	125.5		3.30	2.10	
Brisbane	693	63.7		2.84	1.80	
Adelaide	659	81.5		2.82	1.91	
Perth	476	45.5		2.68	1.66	
Hobart	130	20.6		2.11	1.31	
ΣX ...	6 247	481.00	703 542.9	17.11	10.94	31.90
ΣX^2 ...	10 406 647	49 738.4		49.83	20.44	
$\overline{X}$ ...	1 041.17	80.17		2.85	1.82	
σ_X ...	883.46	47.28		0.46	0.31	

log b = 0.6771

log a = -0.1096

Regression Equation: log Y = -0.1096 + 0.6771 log X

r = 0.9707 t = 8.079 α 0.01

r^2 = 0.9423

Sy = 11.3611

Sources:

(1) See Tables 3.8 and 3.9.

(2) See Table 3.7.

TABLE 3.15

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR INNER CITY AREA RETAIL SALES(1) vs POPULATION(2) - 1968-1969

City	Population ('000)	I.C.A. Retail Sales ($million constant = 1956)				
	X	Y	X Y	log X	log Y	log X log Y
Sydney	2 647	229.1		3.42	2.36	
Melbourne	2 320	269.3		3.37	2.43	
Brisbane	813	131.7		2.91	2.12	
Adelaide	784	191.2		2.90	2.28	
Perth	606	109.7		2.78	2.04	
Hobart	145	47.5		2.16	1.68	
ΣX ...	7 325	978.5	1 563 454.3	17.54	12.91	38.34
ΣX^2 ...	14 068 675	193 201.97		52.33	28.15	
$\bar{X}$ ...	1220.83	163.08		2.92	2.15	
σ_X ...	1012.53	82.01		0.46	0.27	

log b = 0.5686

log a = 0.4896

Regression Equation: log Y = 0.4896 + 0.5686 log X

r = 0.8885 t = 3.873 α = 0.02

r^2 = 0.7894

Sy = 37.6325

Sources:

(1) See Tables 3.8 and 3.9.

(2) See Table 3.7.

Several factors would account for this complex relationship. First the Inner City Area sales of both smaller and larger cities would have been influenced by the rising level of real income. Second, Inner City Areas of larger cities would have had a greater number and variety of customers in their trade areas. These two factors combined could be expected to lead to absolute growth in the Inner City Areas which would increasingly serve the specialist and atypical demands of the entire Metropolitan Area. Third, as cities grow larger numbers of customers would be drawn from an increasingly large inner city workforce and those on business visits to the inner city. Fourth, a very complex set of relationships associated with ease of transport and level of congestion, mostly negative, would determine the level of growth of Inner City Area retail sales. These would include distance from periphery to centre of the city, population density within the city, level of freeway development, adequacy of inner city parking facilities, quality of public transport etc. Fifth, as cities grow, both in population size and actual area, opportunities arise for establishments and shopping centres to grow up in suburban locations to meet the demands of the consumer, whose aim it is to satisfy his various needs with the minimum expenditure of effort and money, and at the same time to satisfy the retailer whose aim it is to locate so as to maximize profits. Variation in Population size, operating as a surrogate for the sum of these factors "explains" about 95 percent of the variation in Inner City Area sales for 1956-57 and 1961-62. In 1968-69, however, variation in population size accounted for 79 percent of variation in Inner City Area sales as regional differences became more apparent.

Per capita retail sales in Australian Metropolitan Areas rose, on average, from $313.64 to $798.19 (in constant dollars)

between 1956-57 and 1968-69 (Table 3.16), that is there was an average overall increase of 12.87 percent per annum over the 12 year period. Chi square tests show that in 1956-57 (Table 3.17) and again in 1961-62 (Table 3.18) there was no significant difference at the 0.01 level between the per capita retail sales in the six Metropolitan Areas and the national average. On the other hand the Chi square test indicated that by 1968-69 (Table 3.19) there had developed a difference at the 0.01 significance level. It may be reasonably assumed, however, that regional differences in disposable income were not so great as to markedly affect the overall trend which Table 3.16 illustrates, namely, that as Australian cities grow in size and develop over time the per capita retail sales in the Inner City Areas drop, resulting in a decline in the importance of the central shopping district in the retail structure of the city. This trend may be seen clearly in the pie graphs in Figure 3.3 which shows both the growth of the cities' Metropolitan Area retail sales and the percentage of Metropolitan Area retail sales in the Inner City Areas.

TABLE 3.16

PER CAPITA RETAIL SALES IN THE INNER CITY AREAS AND METROPOLITAN AREAS OF AUSTRALIAN CITIES : 1956-57, 1961-62 and 1968-69 (IN CONSTANT DOLLARS)

City	Retail Area	Per Capita Retail Sales ($ Constant : 1956=100) 1956-57	1961-62	1968-69	Annual Percentage Change 1956-57/ 1961-62	1961-62/ 1968-69	1956-57/ 1968-69
Sydney	I.C.A.	84.78	62.58	86.56	-5.24	5.47	0.17
	M.A.	310.52	311.14	816.33	0.04	23.20	13.57
	%	27.30	20.11	10.60			
Melbourne	I.C.A.	85.44	63.22	116.06	-5.20	11.94	2.99
	M.A.	315.36	300.06	808.67	-0.97	24.21	13.04
	%	27.09	21.07	14.35			
Brisbane	I.C.A.	131.46	91.97	162.02	-6.01	10.88	1.94
	M.A.	297.96	255.04	717.43	-2.88	25.90	11.73
	%	44.12	36.06	22.58			
Adelaide	I.C.A.	161.52	123.63	240.77	-4.69	13.54	4.09
	M.A.	317.69	269.78	725.01	-3.02	24.11	10.68
	%	50.84	45.83	33.21			
Perth	I.C.A.	121.61	95.62	180.95	-4.27	12.75	4.07
	M.A.	327.33	304.02	879.28	-1.42	27.03	14.05
	%	37.15	31.45	20.58			
Hobart	I.C.A.	225.91	158.69	327.74	-5.95	15.22	3.76
	M.A.	363.64	309.56	813.80	-2.97	23.27	10.32
	%	62.12	51.26	40.27			
All State Capitals	$\bar{X}$ I.C.A.	103.08	77.00	133.58	-5.06	10.50	2.47
	$\bar{X}$ M.A.	313.76	296.46	798.19	-1.10	24.18	12.87
	%	32.85	25.97	16.74			
	χ^2 M.A.	9.40	9.73	23.97			
	α M.A.	0.10>p>0.05	0.1>p>0.05	<0.001			

Sources

1. Retail Sales in Constant Dollars - Table 3.9.
2. Population of Metropolitan Areas - Table 3.7.

TABLE 3.17

CALCULATION OF CHI SQUARE TO TEST FOR SIGNIFICANCE IN REGIONAL VARIATION OF PER CAPITA RETAIL SALES IN METROPOLITAN AREAS(1) - 1956-57

City	x	Observed Frequency Oi	Expected Frequency Ei	(O_i-E_i)	$(O_i-E_i)^2$	$\frac{(O_i-E_i)^2}{E_i}$
Sydney		310.52	313.76			
Melbourne		315.36				
Brisbane		297.96				
Adelaide		317.69				
Perth		327.33				
Hobart		363.64				
TOTAL		1 932.50	1 882.56			9.40

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i} = 9.40$$

H_o : there is no significant difference between the expected and observed frequencies at the 0.01 level.

The table of critical values of Chi Square shows that $\chi^2 \geq 9.40$ for df = 5 has probability of occurrence between p = 0.10 and p = 0.05. That is, $0.10 > p > 0.05$. Inasmuch as that probability is larger than the previously set level of significance, $\alpha = 0.01$ we cannot reject the H_o at that significance level.

Source of data

(1) Table 3.16.

TABLE 3.18

CALCULATION OF CHI SQUARE TO TEST FOR SIGNIFICANCE IN REGIONAL VARIATION OF PER CAPITA RETAIL SALES IN METROPOLITAN AREAS(1) - 1961-62

City	O_i	E_i	(O_i-E_i)	$(O_i-E_i)^2$	$\frac{(O_i-E_i)^2}{E_i}$
Sydney	311.14	296.46			
Melbourne	300.06				
Brisbane	255.04				
Adelaide	269.78				
Perth	304.02				
Hobart	309.58				
TOTAL					9.73

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i-E_i)^2}{E_i} = 9.73$$

H_o : there is no significant difference between the expected and observed frequencies at the 0.01 level.

The table of critical values of Chi Square shows that $\chi^2 \geq 9.73$ for df = 5 has probability of occurrence between p = 0.01 and p = 0.05. That is, $0.10 > p > 0.05$. Inasmuch as that probability is larger than the previously set level of significance, $\alpha = 0.01$ we cannot reject the H_o at that significance level.

Source of data

(1) Table 3.16.

TABLE 3.19

CALCULATION OF CHI SQUARE TO TEST FOR SIGNIFICANCE IN REGIONAL VARIATION OF PER CAPITA RETAIL SALES IN METROPOLITAN AREAS(1) - 1968-69

City	O_i	E_i	(O_i-E_i)	$(O_i-E_i)^2$	$\frac{(O_i-E_i)^2}{E_i}$
Sydney	816.33	798.19			
Melbourne	808.67				
Brisbane	717.43				
Adelaide	725.01				
Perth	879.28				
Hobart	813.80				
TOTAL					

$$\chi^2 = \sum_{i=1}^{k} \frac{(O_i-E_i)^2}{E_i} = 23.97$$

H_o : there is no significant difference between the expected and observed frequencies at the 0.01 level.

The table of critical values of Chi Square shows that $\chi^2 = 23.97$ for df = 5 has a probability of occurrence <0.001. That is, p <0.001. Inasmuch as that probability is smaller than the previously set level of significance, $\alpha = 0.01$ we can reject the H_o at that significance level.

E_i = Mean per capita retail sales in Metropolitan Areas of all State capitals.

Source of data

(1) Table 3.16.

The Declining Importance of the Inner City Area in the Retail Trade of Austalian Capital Cities: 1956-57 to 1968-69

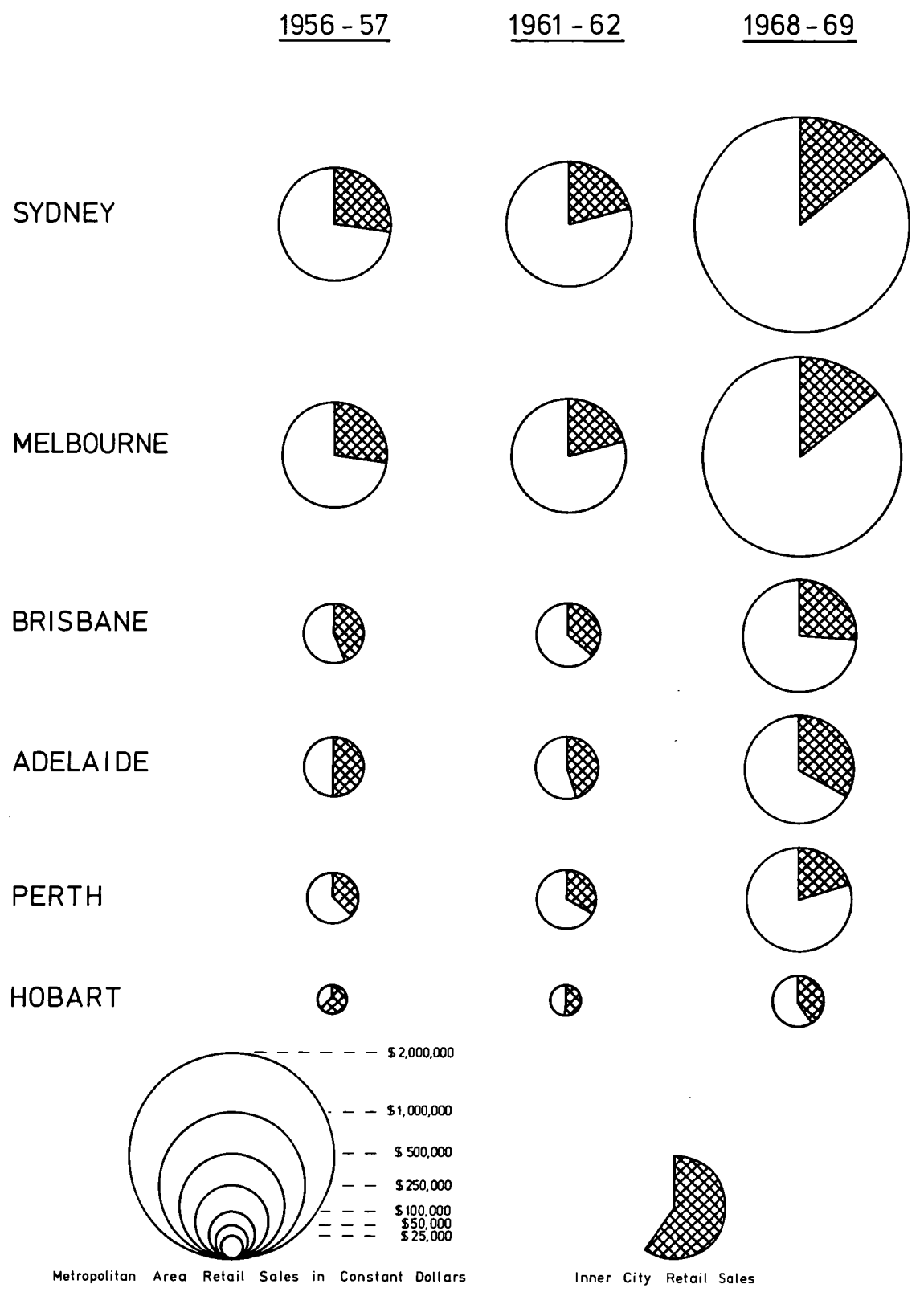


Figure 3·3

In 1956-57 only Adelaide and Hobart, two of the three smallest Australian State capitals, had more than 50 percent of their retail sales in their Inner City Areas. The others exhibited varying degrees of decentralization in that their central areas were inferior to the total remainder in value of retail sales. By 1961-62 Hobart alone had more than 50 percent of its Metropolitan Area sales in its Inner City Area, and by 1968-69 even Hobart's Inner City Area retail sales had dropped to 40 percent. What is particularly noteworthy is the fact that in a period of only 12 years the Inner City Areas of Australian capital cities have seen their proportion of Metropolitan Area retail sales cut by half, from 32.85 percent in 1956-57 to 16.74 percent in 1968-69 (Table 3.16).

As Metropolitan Area population increases, so the percentage of Metropolitan Area retail sales made in the Inner City Area declines. Tables 3.20, 3.21 and 3.22 show that in 1956-57, 1961-62 and 1968-69 there was a negative correlation ($r = -0.85$, $r = -0.88$ and $r = -0.85$) between proportion of Metropolitan Area retail sales in the Inner City Area and Metropolitan Area population, significant at the 0.05 level, and that variation in population size accounts for about 72 percent of variation in the percentage of Metropolitan Area retail sales in the Inner City Area. The form of this relationship is shown by means of the regression equation and line in Figure 3.4. There is danger in making assumptions about conditions beyond the limits of the data, but it would appear from the regression lines that in towns of about 20 000 inhabitants virtually all retailing can be performed from a central location.

TABLE 3.20

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR PERCENTAGE OF METROPOLITAN AREA RETAIL SALES IN THE INNER CITY AREA[1] vs POPULATION[2] - 1956-57

City	Population ('000) X	% M.A. Retail Sales in I.C.A. Y	X Y	log X	log Y	log X log Y
Sydney	1,949	27.30		3.29	1.44	
Melbourne	1 629	27.09		3.21	1.43	
Brisbane	528	44.12		2.72	1.64	
Adelaide	518	50.84		2.71	1.71	
Perth	372	37.15		2.57	1.57	
Hobart	100	62.12		2.00	1.79	
ΣX ...	5 096	248.62	166 999.6	16.50	9.58	26.04
ΣX^2 ...	7 147 734	11 249.46		46.48	15.40	
$\bar{X}$ ...	849.33	41.44		2.75	1.60	
σ_X ...	750.94	13.77		0.47	0.15	

log b = -0.2760

log a = 2.3590

Regression Equation: log Y = 2.3590 -0.2760 log X

r = -0.8544 t = 3.289 α = 0.05

r^2 = 0.7300

Sy = 7.1551

Sources

(1) See Table 3.8.

(2) See Table 3.7.

TABLE 3.21

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR PERCENTAGE OF METROPOLITAN AREA RETAIL SALES IN THE INNER CITY AREA[1] vs POPULATION[2] - 1961-1962

City	Population ('000) X	% M.A. Retail Sales in I.C.A. Y	X Y	log X	log Y	log X log Y
Sydney	2 304	20.11		3.36	1.30	
Melbourne	1 985	21.07		3.30	1.32	
Brisbane	693	36.03		2.84	1.56	
Adelaide	659	45.83		2.82	1.66	
Perth	476	31.45		2.68	1.50	
Hobart	130	51.26		2.11	1.71	
ΣX ...	6 247	205.78	164 982.9	17.11	9.05	25.46
ΣX^2 ...	10 406 647	7 865.76		49.83	13.80	
$\bar{X}$ ...	1041.17	34.30		2.85	1.51	
σ_X ...	883.46	12.71		0.46	0.17	

log b = -0.3349

log a = 2.4644

Regression Equation: log Y = 2.4644 -0.3349 log X

r = -0.8773 t = 3.289 α = 0.05

r^2 = 0.7697

Sy = 6.1001

Sources

(1) See Table 3.8.

(2) See Table 3.7.

TABLE 3.22

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR PERCENT OF METROPOLITAN AREA RETAIL SALES IN THE INNER CITY AREA[1] vs POPULATION[2] - 1968-69

City	Population ('000) X	% M.A. Retail Sales in I.C.A. Y	X Y	log X	log Y	log X log Y
Sydney	2 647	10.60		3.42	1.03	
Melbourne	2 320	14.35		3.37	1.16	
Brisbane	813	22.58		2.91	1.35	
Adelaide	794	33.21		2.90	1.52	
Perth	606	20.58		2.78	1.31	
Hobart	145	40.27		2.16	1.60	
ΣX ...	7 325	141.59	124 387.1	17.54	7.97	22.87
ΣX^2 ...	14 068 675	3 976.25		52.33	10.82	
$\bar{X}$ ...	1 220.83	23.60		2.92	1.33	
σ_X ...	1 012.53	11.27		0.46	0.21	

log b = -0.4067

log a = 2.5176

Regression Equation: log Y = 2.5176 -0.4067 log X

r = -0.8496 t = 3.222 α 0.05

r^2 = 0.7218

Sy = 5.9441

Sources

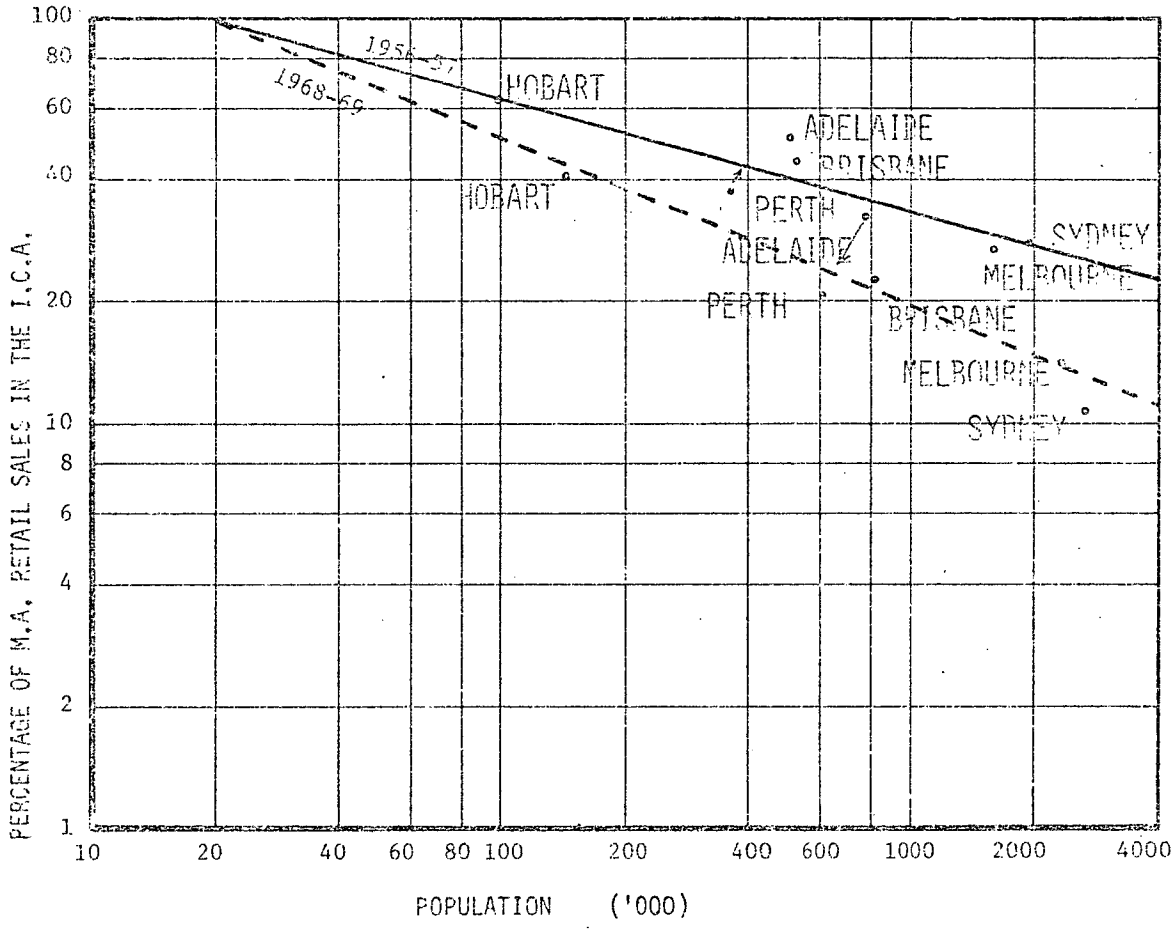
(1) See Table 3.8.

(2) See Table 3.7.

The rate of decentralization appears to be most rapid in the early stages and gradually levels out. For instance, the regression equation for 1968-69 would suggest that the difference in the proportion of Metropolitan Area retail sales in the Inner City Area of a city of 100 000 and a city of 200 000 would be 12.43 percent (50.61% to 38.17%), while the difference between a city of one million and another of two million would be only 4.88 percent (19.84% to 14.96%).

The effect of factors other than population growth may be seen by comparing the regression equations for 1956-57 and 1968-69. In 1956-57 a city of 100 000 could have expected to have had 64.12 percent of all Metropolitan Area retail sales in the Inner City Area while a city of one million would have had only 33.96 percent. A ten fold increase in population, from 100 000 to 1 000 000, would have led to about 50 percent loss in the proportion of Metropolitan Area retail sales in the Inner City Area. In the twelve years between 1956-57 and 1968-69, however, the various centripetal and centrifugal forces at work exerted different pressures from those exerted prior to 1956-57, so that, had the populations of both the smaller and the larger cities remained static, the proportion of their Metropolitan Area retail sales in their Inner City Areas would have fallen to 50.61 percent and 19.84 percent, that is, by 13.51 percent and 14.12 percent respectively.

PERCENTAGE OF METROPOLITAN AREA RETAIL SALES IN THE INNER CITY AREA vs POPULATION - 1956-57 AND 1968-69



% M.A. Retail Sales in I.C.A. - 1956-57 $\log Y = 2.3590 - 0.2760 \log X$ $r=-0.85$

% M.A. Retail Sales in I.C.A. - 1968-69 $\log Y = 2.5176 - 0.4067 \log X$ $r=-0.85$

Figure 3.4

Approximate predictions regarding level of decentralization may be made by means of a model built upon the regression equations for 1956-57 and 1968-69, using the formula :

$$E_y = P - \left[\text{antilog } (2.3590 - 0.2760 \log X_1)\right] - \left[\text{antilog } (2.5176 - 0.4067 \log X_2)\right] . \frac{t}{12}$$

where E_y = the expected or predicted percentage of Metropolitan Area retail sales in the Inner City Area in year y,

y = the year for which the prediction is made,

P = the percentage of Metropolitan Area retail sales in the Inner City Area in 1956-57,

X_1 = the population of the city (in '000) in 1956-57,

X_2 = the projected population (in '000) in year y, and

t = the number of years from 1956 to year y.

Table 3.23 'predicts' the percentage of Metropolitan Area retail sales in the Inner City Area of each of the State capitals for the year 1961-62, given the percentage of Metropolitan Area retail sales in the Inner City Area of the city in 1956-57 (P), the population of the city in 1956-57 (X_1) and the projected population of the city in 1961-62 (X_2). To test the validity of the model the Chi square test (Table 3.24) was used to compare the predicted or expected percentages with the observed percentages for 1961-62. The test confirmed that there was no significant difference between the expected frequencies and the observed frequencies at the 0.01 level.

TABLE 3.23

TABULATION OF DATA FOR PREDICTING LEVEL OF DECENTRALIZATION OF RETAILING FROM THE INNER CITY AREAS OF AUSTRALIAN STATE CAPITALS.

City	P (1956-57)	X_1 (1956-57)	X_2 (1961-62)	t	% Points Decline	E (1961-62)
Sydney	27.30	1 949	2 304	5	5.88	21.42
Melbourne	27.09	1 629	1 985	5	6.11	20.98
Brisbane	44.12	528	693	5	7.28	36.84
Adelaide	50.84	518	659	5	7.17	43.67
Perth	37.15	372	476	5	7.41	29.74
Hobart	62.12	100	130	5	7.77	54.35

Formula

$$Ey = P - \frac{\{\text{antilog}(2.359-0.276 \log X_1)\}-\{\text{antilog}(2.5176-0.4067 \log X_2)\}.t}{12}$$

where E = the expected or predicted percentage of Metropolitan Area retail sales in the Inner City Area in year y,
y = the year for which the prediction is made,
P = the percentage of Metropolitan Area retail sales in the Inner City Area in 1956-57,
X_1 = the population of the city in 1956-57 (in '000),
X_2 = the projected population in year y (in '000),
t = the number of years from 1956-57 to year y.

Source

For P, see Table 3.8.

For X_1, see Table 3.7.

For X_2, see Table 3.7.

TABLE 3.24

CALCULATION OF CHI SQUARE TO TEST FOR SIGNIFICANT DIFFERENCE BETWEEN OBSERVED AND PREDICTED FREQUENCIES IN PERCENTAGE OF METROPOLITAN AREA RETAIL SALES IN INNER CITY AREAS OF AUSTRALIAN STATE CAPITALS

City	% M.A. Sales in I.C.A. 1961-62				
	O_i	E_i	(O_i-E_i)	$(O_i-E_i)^2$	$\frac{(O_i-E_i)^2}{E_i}$
Sydney	20.11	21.42			
Melbourne	21.07	20.98			
Brisbane	36.06	36.84			
Adelaide	45.83	43.67			
Perth	31.45	29.74			
Hobart	51.26	54.35			
					0.4779

$$\chi^2 \quad \sum_{i=1}^{k} \frac{(O_i-E_i)^2}{E_i} = 0.4779$$

H_o : there is no significant difference between the expected frequencies and the observed frequencies at the 0.01 level.

The table of critical values of Chi Square shows that $\chi^2 = 0.4779$ for df = 5 has a probability of occurrence in excess of 0.99. That is $p > 0.99$. Inasmuch as that probability is larger than the previously set level of significance, $\alpha = 0.01$ we cannot reject the H_o at that significance level.

TABLE 3.25

PREDICTION OF PERCENTAGE OF METROPOLITAN AREA RETAIL SALES IN THE INNER CITY AREA OF HOBART : 1956-1981

Year	Observed		Expected	
	Population ('000)(1)	% M.A. Sales in I.C.A.(2)	Population ('000)(3)	% M.A. Sales in I.C.A.
1956	100	62.12	100	62.12
1961	130	51.26	130	54.35
1966			140.39	45.42
(1968-69)	145	40.27	144.78	41.53
1971	-	-	151.62	35.38
1976	-	-	163.74	24.27
1981	-	-	176.82	12.15

Sources

1. Observed population - Table 3.7.
2. Observed % of M.A. Retail Sales in I.C.A. of Hobart - Table 3.8.
3. Expected population - assuming a future compound growth rate of 1.55% from the 1961 base of 130,000.
4. Expected % of M.A. Retail Sales in I.C.A. of Hobart based on formula in the 'model'.

Table 3.25 and Figure 3.5 show the model applied to Hobart between 1956 and 1981. Both are seen to 'predict' a rapid decline in the percentage of the Metropolitan Area's retail sales in the Inner City Area, so that by 1974 about 29 percent of retailing can be expected in the Inner City Area, provided that factors at work throughout Australia up to 1968-69 continue to exert the same force in Hobart during the next decade, and provided that Hobart's Metropolitan Area population growth rate of 1.55 percent, adopted by the Public Works Department (1970, 11) is accurate. The first of these assumptions appears to be less well founded than the second for, it could be argued, in the 1960's and early 1970's the supply side of the market was undergoing very rapid change by way of suburban shopping centre development in response to increased consumer affluence and mobility, and the many disadvantages associated with shopping in the Inner City Area, and that by the late 1970's an equilibrium situation could well be achieved which would result in a slowing down of the process of decentralization. Modifications to the model could be made as new trends are identified from future retail Censuses undertaken by the Australian Bureau of Statistics.

PREDICTION OF PERCENTAGE OF METROPOLITAN AREA RETAIL SALES IN THE INNER CITY AREA OF HOBART - 1956 TO 1981.

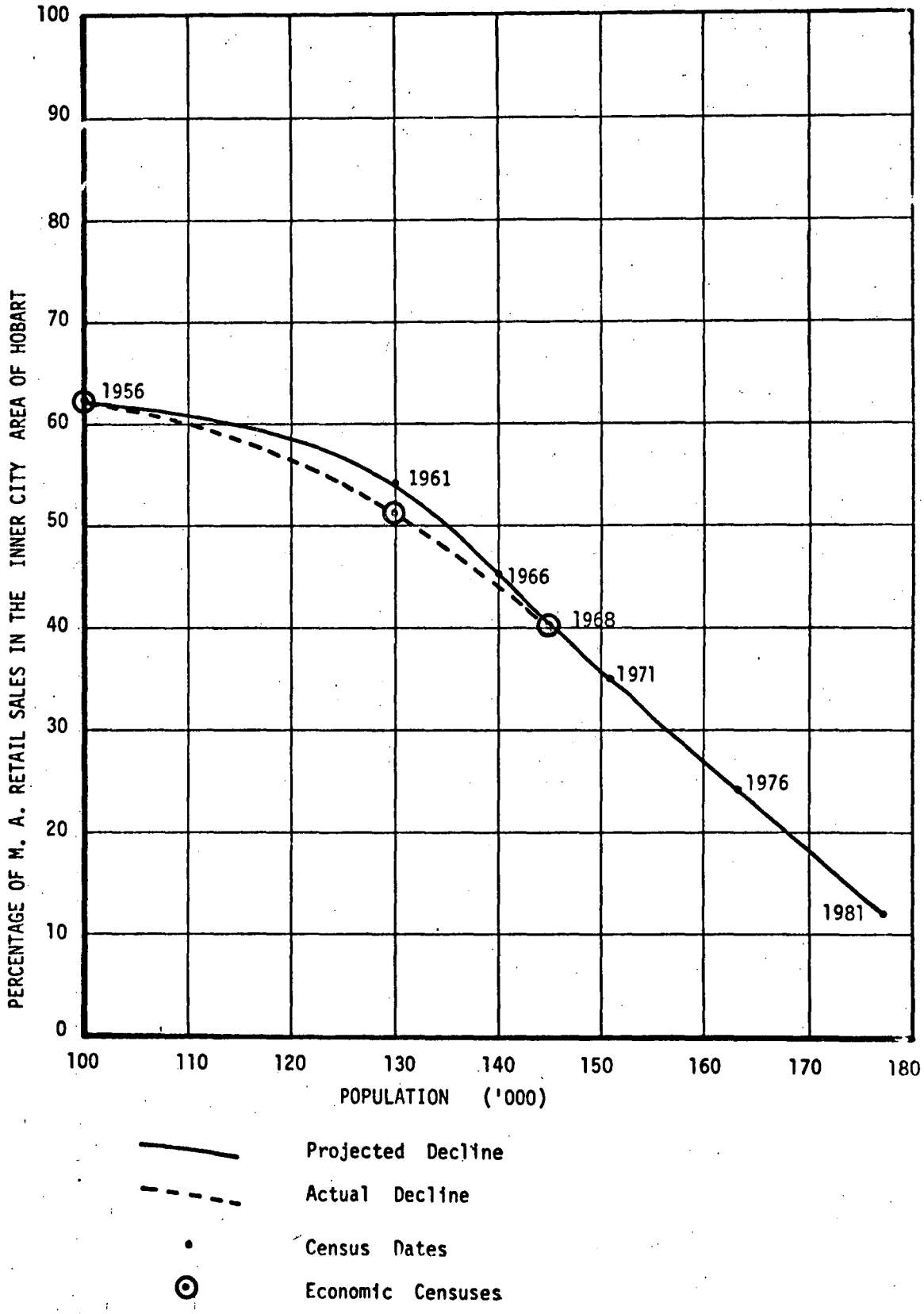


Figure 3.5

III.5.b. Commodities

As cities grow and consumers visit the Inner City Area less frequently so the central shopping district concentrates increasingly upon the sale of goods for which it is best suited, namely, those purchased least frequently by the total population. The complementary processes of decentralization and specialization which result from this adjustment are clearly apparent in Hobart. In the intercensal period from 1961-62 to 1968-69 a fall of 11 percent was registered in the proportion of Metropolitan Area retail sales made in the Inner City Area (Table 3.26), and the city changed from one which exhibited centralized retailing, with 51.26 percent of the Metropolitan Area's retail sales being made in the Inner City Area, to one which exhibited a state of decentralization, in that concentration at the city centre was exceeded by the sum of all other concentrations (Beed, 1963, 97). At the same time Hobart's coefficient of specialization rose from 1.57 to 2.17 (Tables 3.27 and 3.28) [1].

---

1. The coefficient of specialization was used by Johnston (1965, 38) to measure the degree of specialization of Australian central business areas, and is determined by computing a location quotient for each commodity group by dividing the percentage of the Inner City Area sales in the group by the percentage for the Metropolitan Area in the same group. These location quotients are then squared, summed, and divided by the number of commodity groups. The larger the result, the greater the degree of specialization. He found that in the five-year period 1956-57 to 1961-62 each Inner City Area except that of Hobart had become more specialized.

TABLE 3.26

PROPORTION OF METROPOLITAN AREA RETAIL SALES IN THE INNER CITY AREA OF HOBART BY COMMODITY FOR 1961-62 AND 1968-69.

Commodity	% of M.A. Sales in I.C.A. 1961-62	1968-69	Change
Watches & Jewellery	89.97	88.10	-1.87
Washing Machines, Stoves	70.73	87.59	16.86
Refrigerators	81.48	85.91	4.43
Women's Clothing	90.61	82.74	-7.87
Men's Clothing	87.35	79.81	-7.54
Women's Footwear	88.30	77.61	-10.69
Television Sets	73.75	70.14	-3.61
Fabrics & Furnishings	83.79	69.79	-14.00
Men's Footwear	81.36	71.13	-10.23
Furniture	73.95	67.70	-6.25
Domestic Hardware	79.83	61.79	-18.04
Floor Coverings	72.33	57.83	-14.50
Radios, etc.	82.87	57.10	-25.77
Other Goods	71.58	52.22	-19.36
Motor Vehicles (New Parts)	43.87	46.75	2.88
Books, Stationery, etc.	54.52	45.21	-9.31
Fish, Chips, Hamburgers	47.53	31.61	-15.92
Patent Medicines	50.00	31.25	-18.75
Bread and Cakes	27.25	29.80	2.55
Confectionery, etc.	32.45	28.78	-3.67
Fruit	33.63	27.26	-6.37
Beer, Wine & Spirits	26.27	22.83	-3.44
Meat	27.11	18.13	-8.98
Cigarettes & Tobacco	26.58	16.87	-9.71
Groceries	20.87	13.24	-7.63
Petrol, Oils, etc.	10.10	6.32	-3.78
All Commodities	51.26	40.27	-10.99

Commodities not included: Musical Instruments, etc., Motor Vehicles (New), and (Used), Motor Vehicles (Used Parts), Motor Cycles, Motor Tyres and Batteries, Boats and Caravans, Cosmetics, Prescription Medicine, Photographic Equipment, Sporting Goods and Bicycles, Antiques and Second Hand Goods, Flowers and Shrubs, Travel Goods, Bottled Gas.

Sources

C.B.C.S., (1964f). Table 20, 31-35.

C.B.C.S., (1973d). Table 2, 15-19.

TABLE 3.27

RANK ORDER OF SPECIALTY QUOTIENTS FOR COMMODITIES SOLD IN HOBART INNER CITY AREA : 1961-62

Rank	Commodity	% of Total I.C.A. Sales	% of Total M.A. Sales	I.C.A. Specialty Quotient	Persons per Establishment (M.A. Pop.)
1.	Women's & Girls' Clothing	14.23	8.05	1.77	1 305.80
2.	Watches & Jewellery	1.47	0.84	1.75	2 376.56
3.	Women's & Girls' Footwear	2.90	1.	1.73	2 242.04
4.	Men's & Boys' Clothing	8.01	4.70	1.70	1 916.58
5.	Fabrics & Furnishings	4.19	2.56	1.64	2 014.03
6.	Radios etc.	0.65	0.40	1.63	2 200.52
7.=	Men's & Boys' Footwear	1.24	0.78	1 59	2 200 52
7.=	Refrigerators	1.61	1.01	1.59	2 376.56
9.	Domestic Hardware	2.92	1.87	1.56	1 800.42
10.=	Furniture	3.34	2.32	1.44	2 970.70
10.=	Television	1.91	1.33	1.44	1 828.12
12.	Floor Coverings	2.22	1.57	1.41	4 243.86
13.	Other Goods	4.36	3.12	1.40	848.77
14.	Washing Machines, Stoves	2.70	1.96	1.38	1 414.62
15.	Books, Stationery, Newspapers	2.99	2.81	1.06	966.08
16.	Patent Medicines	3.31	3.39	0.98	848.77
17.	Fish, Chips, Hamburgers	1.37	1.47	0.93	576.83
18.	Motor Vehicles (New Parts)	2.02	2.36	0.86	900.21
19.	Fruit	1.46	2.23	0.65	372.50
20.	Confectionery, etc.	1.64	2.59	0.63	227.20
21.=	Bread & Cakes	1.08	2.04	0.53	401.45
21.=	Meat	3.07	5.80	0.53	698.99
23.	Cigaretts & Tobacco	1.63	3.15	0.52	177.36
24.	Beer, Wine & Spirits	3.69	7.20	0.51	1 320.31
25.	Groceries	4.08	10.03	0.41	316.87
26.	Petrol, Oils etc.	0.74	3.74	0.20	1 051.58
	All Commodities		79.00		

Commodities not included - Musical Instruments etc., Motor Vehicles (New), Motor Vehicles (Used), Travel Goods.

Coefficient of Specialization : 1.57.

Source

C.B.C.S., (1964f). Table 20, 31.35.

TABLE 3.28

RANK ORDER OF SPECIALTY QUOTIENTS FOR COMMODITIES SOLD

IN HOBART INNER CITY AREA : 1968-69

Rank 1968-69	Commodity	% of Total I.C.A. Sales	% of Total M.A. Sales	I.C.A. Specialty Quotient	Persons per Establishment (M.A. pop.)	Rank 1961-62
1.=	Watches & Jewellery	1.74	0.80	2.18	3 000.5	2
1.=	Travel Goods	0.48	0.22	2.18	6 376.0	-
3.	Washing Machines, Stoves	2.10	0.97	2.16	3 825.6	14
4.	Refrigerators	1.13	0.53	2.13	4 782.0	7=
5.	Photographic Equipment	1.09	0.53	2.06	1 663.3	-
6.=	Women's & Girls' Clothing	14.67	7.14	2.05	1 296.8	1
6.=	Musical Instruments, etc.	0.78	0.38	2.05	3 923.7	-
8.	Men's & Boy's Clothing	7.56	3.81	1.98	2 125.3	4
9.	Women's & Girl's Footwear	2.64	1.37	1.93	2 468.1	3
10.	Sporting & Bicycles	2.11	1.19	1.77	2 067.9	-
11.=	Television Sets	0.79	0.45	1.76	4 782.0	10=
11.=	Fabrics & Furnishings	3.99	2.27	1.76	2 550.4	5
13.	Men's & Boys' Footwear	1.21	0.69	1.75	2 638.34	7
14.	Furniture	4.13	2.46	1.68	3 326.6	10=
15.	Other Household Appliances	1.37	0.86	1.61	3 188.0	-
16.	Domestic Hardware etc.	3.06	2.00	1.53	1 530.2	9
17.	Floor Coverings	1.79	1.24	1.44	4 936.3	12
18.	Radios etc.	1.01	0.71	1.42	2 550.4	6
19.	Cosmetics	1.84	1.34	1.37	801.2	-
20.	Other Goods	1.15	0.89	1.29	1 758.9	13
21.	Motor Vehicles - New Parts	1.53	1.31	1.17	1 150.6	18
22.	Books, Stationery, Newspapers	3.18	2.83	1.12	1 000.2	15
23.=	Fish, Chips, Hamburgers	0.49	0.63	0.78	1 866.2	17
23.=	Patent Medicines	0.66	0.85	0.78	1 244.1	16
25.	Bread & Cakes	0.83	1.12	0.74	529.5	21=
26.	Confectionery etc.	1.90	2.66	0.71	280.3	20
27.	Prescription Medicines	0.92	1.33	0.69	2 468.1	-
28.	Fruit	1.15	1.70	0.68	571.0	19
29.	Motor, Tyres & Batteries	1.09	1.69	0.64	1 116.9	-
30.	Beer, Wine & Spirits	4.77	8.42	0.57	962.4	24
31.	Meat	2.62	5.82	0.45	1 085.3	21=
32.	Cigarettes & Tobacco	1.26	3.02	0.42	213.7	23
33.	Groceries	4.06	12.36	0.33	426.3	25
34.	Petrol, Oils etc.	0.76	4.86	0.16	916.3	26
	All Commodities		78.45			
35-42	Commodities not ranked - Motor Vehicles (New), Motor Vehicles (Used), Motor Vehicle (Used Parts), Motor Cycles, Boats and Caravans, Antiques and Second hand Goods, Flowers and Shrubs, Bottled Gas.					

Coefficient of Specialization : 2.17.

Source

C.B.C.S., (1973d). Table 2, 15-19.

As may be seen in Table 3.26 all but four of the 26 commodity groups for which comparable data was available registered a decline in the percentage of sales in the Inner City Area. Commodities for which there was a frequent demand, such as groceries, cigarettes, and food in general, already decentralized by 1961-62 all registered a substantial drop, leaving less than 30 percent of all sales in the Inner City Area. Books, stationery and newspaper sales changed from being centralized to being decentralized, while petrol, essentially a non-Inner City Area commodity, dropped to a negligible level.

Non-electrical household commodities such as domestic hardware, floor coverings, fabrics and furnishings and furniture showed a substantial loss but, with about 60 percent of sales recorded in the Inner City Area, these were still centralized in Hobart in 1968-69. Electrical goods, on the other hand, showed tendencies both towards decentralization and centralization. By far the most substantial drop of any commodity group was registered by radios, radiograms, tape recorders etc., although this commodity group, along with other more expensive electrical goods, continued to be centralized in 1968-69. Sales of television sets continued to be highly centralized in spite of a small drop, and other expensive electrical items such as washing machines, stoves and refrigerators which demanded comparison shopping, moved against the general trend to become more centralized, and in 1968-69 were among the most highly centralized of all commodities.

Clothing and footwear were still among the most highly centralized commodities in Hobart in 1968-69. In spite of a drop of 10 percent, Inner City Area sales of men's and women's footwear still accounted for more than 70 percent of Metropolitan Area sales

in this commodity group. Men's and women's clothing were even more highly centralized, with about 80 percent of all Metropolitan Area sales being made in the Inner City Area. It is notable that women's footwear and clothing, being more sensitive to changing fashion and therefore requiring a higher degree of comparison shopping, were more centralized than were men's footwear and clothing.

Some of the most highly specialized commodities cannot be included in this analysis either because the 1961-62 Census data were grouped in such a way as to make comparison with 1968-69 data impossible, or because so few establishments recorded sales that data had to be omitted or grouped for reasons of secrecy. It is noteworthy, however, that even the highly specialized commodity group, watches and jewellery, registered some decentralization.

From the foregoing it is clear that changes in the environmental components of the system, mostly demographic changes, such as population growth, dispersal of people from the inner city area to the suburbs, growth in real income, increasing mobility, and changing tastes, have led to changing patterns of consumer behaviour. These have led to an overall decline in the importance of the CBD, when measured in terms of the proportion of metropolitan area retail sales made in the inner city area and, at the same time, have encouraged CBD specialization in the sale of higher order goods for which it is best fitted.

III.5.c. Establishments

The trend towards decentralization of retailing is reflected in the number and kinds of retail establishments remaining in the Inner City Areas of Australia's State capitals. Table 2.29 shows that, while the rate of growth in numbers of retail establishments in Australia's Metropolitan Areas grew at about 2.75 per-

cent per annum between 1956-57 and 1968-69, there was at the same time an average rate of decline of 1.34 percent per annum in the absolute number of establishments in the Inner City Areas. Consequently, on average, the proportion of Australia's Metropolitan Area retail establishments in Inner City Areas fell from about 12 percent in 1956-57 to about 7.5 percent in 1968-69. By 1968-69 Sydney and Melbourne, with populations of about 2½ million, each retained less than 6 percent of their Metropolitan Area retail establishments in their Inner City Areas; the medium-sized cities of Brisbane, Adelaide and Perth retained between 9 percent and 13 percent, while Hobart, because of its small size, retained 26 percent.

The negative correlation between the proportion of retail establishments located in the Inner City Areas of Australian capital cities and their Metropolitan Area populations is shown to be $r = -0.77$ and $r = -0.75$ (Tables 3.30 and 3.31) for 1956-57 and 1968-69 respectively. Variation in city population size accounts for about 60 percent of variation in percentage of Metropolitan Area retail establishments in Inner City Areas. The form of the relationship in 1956-57 and in 1968-69 is shown by means of regression equations and lines in Figure 3.6. The decline is most rapid in the early stages of a city's growth so that, according to the regression equation for 1968-69, the difference between a city of 100 000 and one of 200 000 was 8.2 percent, while the difference between a city of one million and a city of two million was 2.64 percent.

TABLE 3.29

PROPORTION OF METROPOLITAN AREA RETAIL ESTABLISHMENTS IN THE INNER CITY AREA OF AUSTRALIAN STATE CAPITALS : 1956-57, 1961-62 and 1968-69

City		Establishments			Annual Percentage Change		
		1956-57	1961-62	1968-69	1956-57 to 1961-62	1961-62 to 1968-69	1956-57 to 1968-69
Sydney	I.C.A.	2 372[1]	2 205[1]	1 960[7]	-1.41	-1.59	-1.45
	M.A.	22 863	24 843	33 889	1.73	5.20	4.02
	%	10.37	8.88	5.78			
Melbourne	I.C.A.	1 826[2]	1 623[2]	1 454[8]	-2.22	-1.49	-1.70
	M.A.	21 932	23 781	25 682	1.68	1.14	1.42
	%	8.33	6.82	5.66			
Brisbane	I.C.A.	993[3]	934[3]	775[9]	-1.19	-2.43	-1.83
	M.A.	5 633	5 978	8 325	1.22	5.61	3.98
	%	17.63	15.62	9.31			
Adelaide	I.C.A.	1 221[4]	1 213[4]	1 117[10]	-0.13	-1.13	-0.71
	M.A.	6 641	6 975	8 348	1.01	2.81	2.14
	%	18.39	17.39	13.38			
Perth	I.C.A.	675[5]	665[5]	601[11]	-0.30	-1.37	-0.91
	M.A.	4 790	4 754	6 181	-0.15	4.29	2.42
	%	14.09	13.99	9.72			
Hobart	I.C.A.	383[6]	425[6]	364[12]	2.19	-2.05	-0.41
	M.A.	1 181	1 353	1 397	2.91	0.46	1.52
	%	32.43	31.41	26.06			
State Capitals	I.C.A.	7 470	7 065	6 271	-1.08	-1.61	-1.34
	M.A.	63 040	67 684	83 822	1.47	3.41	2.75
	%	11.85	10.44	7.48			

Source:

(1) C.B.C.S., (1964a).
(2) C.B.C.S.,(1964b).
(3) C.B.C.S.,(1964c).
(4) C.B.C.S., (1964d).
(5) C.B.C.S., (1964e).
(6) C.B.C.S., (1964f).
(7) C.B.C.S., (1973f), Table 14, 66.
(8) A.B.S., (1974c), Table 1, 51.
(9) A.B.S., (1974e), Table 1, 46-47.
(10) A.B.S., (1974g), Table 1, 13.
(11) A.B.S., (1974h), Table 1, 4-16.
(12) C.B.C.S., (1973d), Table 1,12.

TABLE 3.30

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR PERCENTAGE OF METROPOLITAN AREA RETAIL ESTABLISHMENTS IN THE INNER CITY AREA(1) vs METROPOLITAN AREA POPULATION(2) - 1956-57

City	Population ('000)	% M.A. Retail Establishments in I.C.A.				
	X	Y	X Y	log X	log Y	log X log Y
Sydney	1 949	10.37		3.29	1.02	
Melbourne	1 629	8.33		3.21	0.92	
Brisbane	528	17.63		2.72	1.25	
Adelaide	518	18.39		2.71	1.26	
Perth	372	14.09		2.57	1.15	
Hobart	100	32.43		2.00	1.51	
ΣX ...	5 096	101.24	61 099.84	16.50	7.11	19.10
ΣX^2 ...	7 147 734	2 076.17		46.48	8.63	
$\bar{X}$ ...	849.33	16.87		2.75	1.18	
σ...	750.94	8.58		0.47	0.21	

log b = -0.4095

log a = 2.3061

Regression Equation: log Y = 2.3061 -0.4095 log X

r = -0.77

r^2 = 0.60

Sy = 5.4265

Sources

(1) Percentage of M.A. Retail Establishments in I.C.A. - 1956-57 - Table 3.29.

(2) 1956-57 Population - Table 3.7.

TABLE 3.31

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR PERCENTAGE OF METROPOLITAN AREA RETAIL ESTABLISHMENTS IN THE INNER AREA[1] vs METROPOLITAN AREA POPULATION[2] - 1968-69

City	Population ('000) X	% M.A. Retail Establishments in I.C.A. Y	X Y	log X	log Y	log X log Y
Sydney	2 647	5.78		3.42	0.76	
Melbourne	2 320	5.66		3.37	0.75	
Brisbane	813	9.31		2.91	0.97	
Adelaide	794	13.38		2.90	1.13	
Perth	606	9.72		2.78	0.99	
Hobart	145	26.06		2.16	1.42	
ΣX ...	7 325	69.91	56 292.63	17.54	6.01	17.05
ΣX^2 ...	14 068 675	1 104.75		52.33	6.34	
$\bar{X}$ ...	1 220.83	11.65		2.92	1.00	
σ...	1 012.53	7.62		0.46	0.25	

log b = -0.4923

log a = 2.4375

Regression Equation: log Y = 2.4375 -0.4923 log X

r = -0.75

r^2 = 0.57

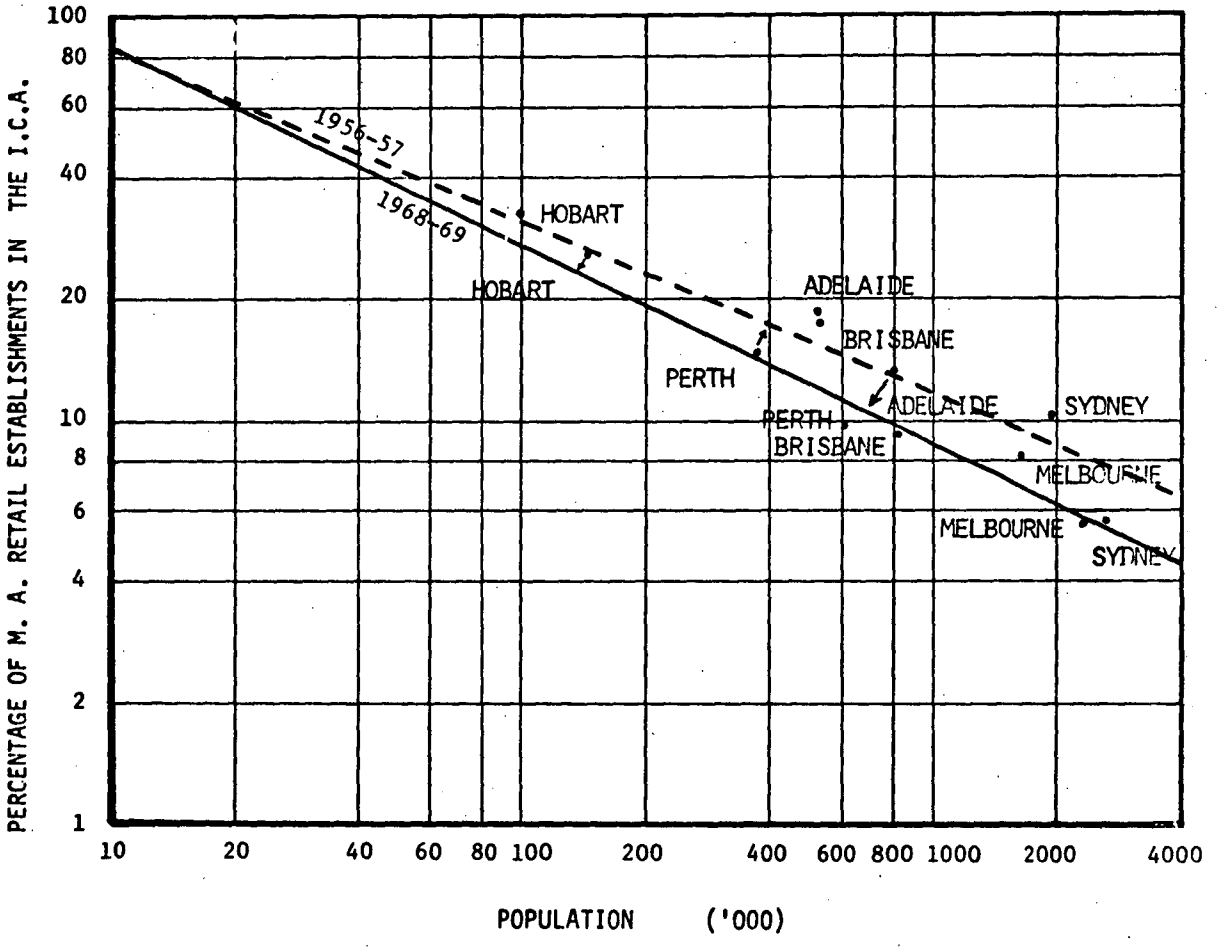
Sy = 5.00

Sources

(1) Percentage of M.A. Retail Establishments in I.C.A. - 1968-69 - Table 3.29.

(2) 1968-69 Population - Table 3.7.

PERCENTAGE OF METROPOLITAN AREA RETAIL ESTABLISHMENTS IN THE INNER CITY AREA vs METROPOLITAN AREA POPULATION - 1956-57 AND 1968-69



% M.A. Retail Establishments in I.C.A.: 1956-57 - $\log Y = 2.3061 - 0.4095 \log X$

% M.A. Retail Establishments in I.C.A.: 1968-69 - $\log Y = 2.4375 - 0.4923 \log X$

Figure 3.6

Not only does the percentage of Metropolitan Area retail establishments in Inner City Areas decline with increasing city size (Figure 3.6), but for a city of any given population size there is a decline with time, the rate of which appears to be about the same irrespective of city size. In the twelve years from 1956-57 to 1968-69 a city the size of Hobart, that is, 100 000, could have expected to lose 2.33 percent (30.70% to 28.37%) of its Inner City Area's retail establishments, while a city of one million could have expected to lose 2.83 percent (11.96% to 9.13%).

TABLE 3.32

REDISTRIBUTION OF RETAIL ESTABLISHMENTS WITHIN THE METROPOLITAN AREAS OF AUSTRALIAN CAPITAL CITIES : 1956-57 to 1968-69

City	1956-57 Establishments			1968-69 Establishments			Change 1956-57 to 1968-69	
	M.A.	I.C.A.	M.A. Less I.C.A.	M.A.	I.C.A.	M.A. Less I.C.A.	M.A. Less I.C.A.	I.C.A.
Sydney	22 863[1]	2 372	20 491	33 889	1 960	31 929	11 438	-412
Melbourne	21 932[2]	1 826	20 106	25 682	1 454	24 228	4 122	-372
Brisbane	5 633[3]	993	4 640	8 325	775	7 550	2 910	-218
Adelaide	6 641[4]	1 221	5 420	8 348	1 117	7 231	1 811	-104
Perth	4 790[5]	675	4 115	6 181	601	5 580	1 465	-74
Hobart	1 181[6]	383	798	1 397	364	1 033	235	-19

Source

(1) C.B.C.S., (1964a).
(2) C.B.C.S., (1964b).
(3) C.B.C.S., (1964c).
(4) C.B.C.S., (1964d).
(5) C.B.C.S., (1964e).
(6) C.B.C.S., (1964f).
(7) C.B.C.S., (1973f). Table 14, 66.
(8) A.B.S., (1974c). Table 2.
(9) A.B.S., (1974e). Table 2.
(10) A.B.S., (1974g). Table 2.
(11) A.B.S., (1974h). Table 2.
(12) C.B.C.S., (1973d). Table 2.

TABLE 3.33

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR DECLINE IN NUMBER OF INNER CITY AREA RETAIL ESTABLISHMENTS vs GROWTH IN NUMBER OF METROPOLITAN AREA RETAIL ESTABLISHMENTS OUTSIDE THE INNER CITY AREA : 1956-57 to 1968-69

City	Growth in No. of Retail Estab. Outside I.C.A. X	Decline in No. of Retail Estab's. Y	X Y	log X	log Y	log X log Y
Sydney	11 438	412		4.06	2.61	
Melbourne	4 122	372		3.62	2.57	
Brisbane	2 910	218		3.46	2.34	
Adelaide	1 811	104		3.26	2.02	
Perth	1 465	74		3.17	1.87	
Hobart	235	19		2.37	1.28	
ΣX ...	21 981	1 199	7 181 439	19.94	12.69	43.54
ΣX^2 ...	161 767 999	372 305		67.85	28.11	
$\bar{X}$ ...	3 664	199.83		3.32	2.12	
σ_X ...	4 031	162.91		0.56	0.50	

log b = 0.8636

log a = -0.7472

Regression Equation: log Y = -0.7472 + 0.8636 log X

r = 0.8494 t = 3.2191 α = < 0.05

r^2 = 0.7215

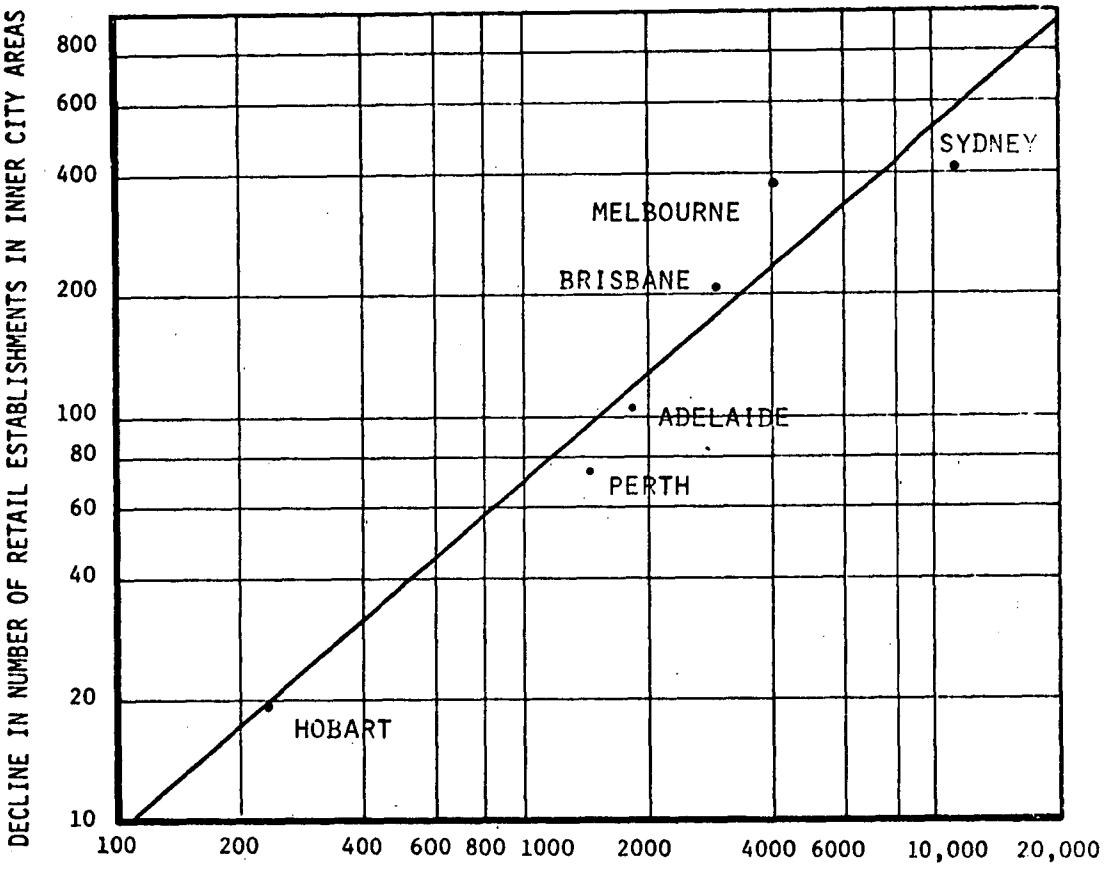
Sy = 85.97

Source

Table 3.32.

As cities grow and an increasing number of people live further from the city centre, establishments that can satisfy their respective thresholds outside the CBD relocate in outlying suburbs. The retail distribution of retail establishments within the metropolitan areas of Australian capital cities between 1956-57 and 1968-69 is shown in Table 3.32. As the number of establishments outside the inner city area grows so the number of establishments within the inner city area drops. The correlation between increase in numbers of establishments outside the CBD and decline in numbers of establishments inside the CBD is $r = 0.85$, significant at the 0.05 level (Table 3.33). In fact, variation in growth of numbers outside the CBD accounts for 72 percent of variation in decline of numbers of CBD establishments. The form of the relationship is shown by means of the regression equation and line shown in Figure 3.7.

DECLINE IN NUMBER OF RETAIL ESTABLISHMENTS IN INNER CITY AREAS vs GROWTH IN NUMBERS OF RETAIL ESTABLISHMENTS IN METROPOLITAN AREAS OUTSIDE THE INNER CITY AREA: 1956-57 TO 1968-69.



GROWTH IN NUMBER OF RETAIL ESTABLISHMENTS IN METROPOLITAN AREAS OUTSIDE THE INNER CITY AREA: 1956-57 - 1968-69

$\log Y = -0.7472 + 0.8636 \log X \qquad r = 0.8494$

Figure 3.7

These generalizations, made from Census data for a small number of Australian cities over a relatively limited period, appear to be in line with trends in the United States. But what is equally noteworthy is the fact that, for a variety of reasons, individual cities of approximately the same population size differ in the proportion of metropolitan area retail sales made in their Inner City Areas. The reversal in the positions of Melbourne and Sydney, with regard to the percentage of metropolitan area retail sales made in the inner city area could be explained, according to Johnston (1965, 380), in terms of the greater development of suburban shopping centres in Melbourne than in Sydney. It is interesting to note (Table 3.8) that in the intercensal period (1961-62 to 1968-69) following Johnston's paper, the proportion of metropolitan area retail sales made in Sydney's CBD dropped to a level below that of Melbourne's CBD, thus conforming with what might be expected.

The important point to establish is that, for a variety of reasons, at any given moment the intra-urban retail systems of individual cities may not be in a state of equilibrium in which demand is balanced by supply in the most efficient manner possible, but that, because of the principle of equifinality, there will be a tendency for all cities ultimately to achieve the same form, provided the same forces are at work. In this connection it is worth noting that Hobart was the only Australian state capital to move against the national downward trend between 1956-57 and 1961-62 when it recorded an increase of 2.19 percent in number of retail establishments in its inner city area (Table 3.29), and that, overall, between 1956-57 and 1968-69, it registered the slowest rate of decline (-0.41% per annum) of any state capital. As a result it had 1.73 percent and 2.43 percent above the 'expected' percentage of

metropolitan area retail establishments in the inner city area (according to the regression equations in Tables 3.30 and 3.31) in 1956-57 and 1968-69 respectively. From this we may conclude that in 1969 Hobart's retail establishments were over centralized and that, without expenditure of effort to keep it that way, Hobart could look forward to a period of accelerated suburban shopping centre development.

CHAPTER IV

CHANGING ENVIRONMENTAL FACTORS

We have seen how, in the last twenty years, Hobart's retailing environment has changed dramatically with growth and dispersal of the city's population, improvement in standards of living, change in personal tastes and behaviour patterns and, above all, with increasing mobility. Changes on the demand side of the market have seriously upset the equilibrium of the retail system, rendering obsolescent both size and form of the established retail centres, the transport and parking facilities serving those centres, and indeed the whole commercial structure of the city. Adjustments in the supply side of the market are taking place at a time when rapid changes are occurring in transport and retail technology and in the technology of other fields such as communications, manufacturing, refrigeration and accounting, all of which indirectly affect retailing. Changes thus brought about in the relationship between components on both the demand and supply sides of the market are leading to long-term shifts which are altering the size of trade areas. In the process the central shopping district is experiencing accelerated dispersal of functions and a more rapid decline in its overall importance in the metropolitan retail structure of Hobart.

IV.1. Increasing Consumer Mobility vs Declining CBD Accessibility

Growing affluence has dramatically increased the average Tasmanian's mobility. In 1970-71 Tasmanians spent slightly more on motor vehicles, their operation and maintenance (28.6%) than they spent on food (26.00%) (Table 3.4). Furthermore, while the

proportion spent on food items dropped about 8 percent the proportion spent on private transport increased by about 16 percent between 1960-61 and 1970-71. Increasing expenditure on private transport has led to growing independence of public transport, as is shown by the Consumer Price Indices (Table 3.3). Between 1963 and 1968 the average Australian's expenditure on public transport dropped from about 30 percent to about 21 percent of his total expenditure on personal transport.

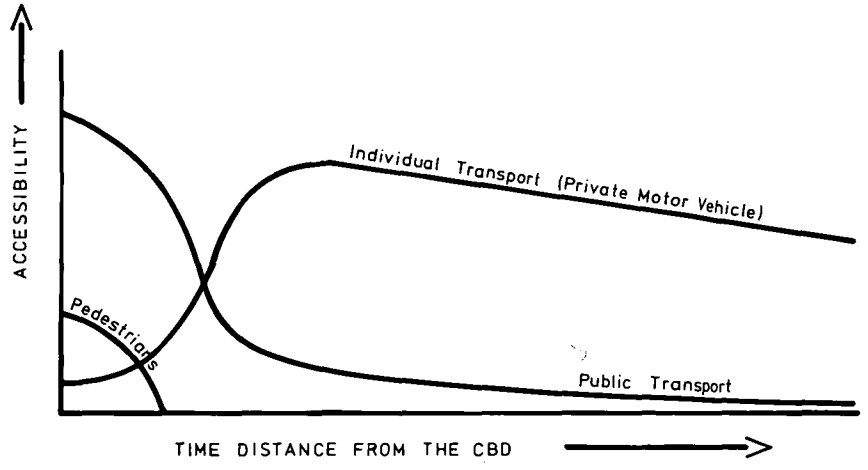
Vehicle ownership had passed the point of being the privilege of the minority when Wilbur Smith and Associates reported on the Hobart scene in 1964. Economic prosperity, increases in standards of living and continued growth in motor vehicle registrations had contributed to the fact that travel by motor vehicle had become a way of life for most people. Between 1942 and 1964 the number of behicles per person had risen from 0.0833 to about 0.237 (Smith, Wilbur, and Associates, 1964, 143). By 1970 it had risen to 0.320 and it is calculated that by 1990, with the value of 0.462, it will almost have reached the estimated saturation level of 0.5 (Department of Public Works, 1970, 18).

The advent of the private vehicle in the post war era has had a dramatic long-term effect upon the retail structure of western cities. Allpass (1967, 107) argues that change-over from public transport to private motor vehicle, while giving greater freedom of choice to consumers, has actually reduced the CBD's accessibility in absolute terms because of the associated traffic congestion and parking difficulties (Figure 4.1.a.). Blumenfeld (1964, 79) claims that it is this congestion, particularly of motor vehicles, and the inability of central areas to provide adequate parking space that acts as the major selective agent in producing

stability of quantity of retailing in the CBD. To Gottman (1972) the private motor vehicle both produces the problem of congestion of the central area and provides the solution by allowing dispersal of economic activities from the CBD.

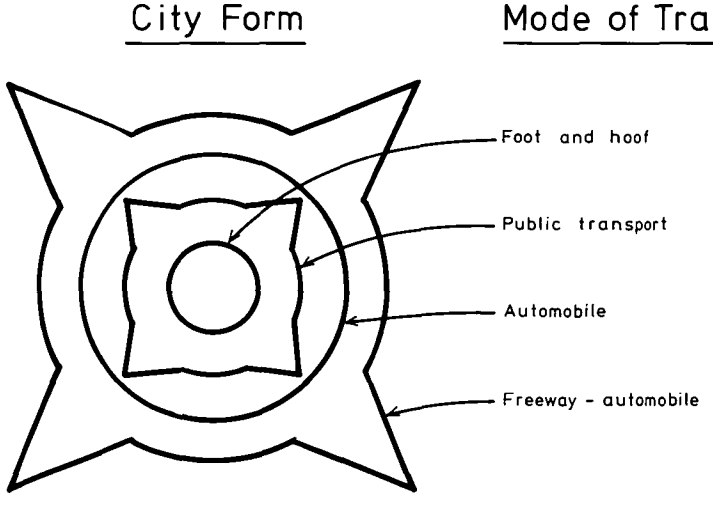
Mode of Transport, Accessibility to the CBD and City Form.

A.



Accessibility in relation to the CBD for different forms of transport.

B.



City form and structure is modified by the predominant mode of transport during each construction era.

Figure 4·1

Changing means of transportation is regarded by many observers as one of the most important factors affecting the development of city structure. Berry's (1965, 2) analysis of commercial structure led him to regard consumer mobility as one of the more dominant forces for long run change, and Vance (1962, 486) is convinced that changing means of personal transportation is by far the most important dynamic factor affecting commercial structure. Certainly, Blumenfeld's (1964, 79) analysis of the urban pattern in the United States supports this view. He concludes that whenever individual transportation predominates, time distances tend to be proportional to straight-line distances, and the overall form of settlement tends to be circular (Figure 4.1.b.). This is the case in what he calls the 'foot-and-hoof' city when the central city is accessible to most of the city's inhabitants. At a time when public transportation predominates development is concentrated mainly along radial traffic routes resulting in star-shaped form. During the era of public transport accessibility to the CBD increases enormously as suburban rail and trolley routes converge on the city centre.

The advent of the private motor vehicle brought about a reversal of this trend and produced, on a vastly larger scale, the circular form of the foot-and-hoof city, so that the pattern, which had begun to emerge during the railway and trolley eras, was submerged in universal sprawl. By implication the motor vehicle must inevitably lead to the dispersal of retail functions from the CBD. Adams (1970), however, takes the view that since 1945 a new era, the freeway-automobile era, has brought to the United States exceptional ease of movement which has again encouraged a star-shaped form and increased accessibility to the CBD. From this one might

conclude that the motor vehicle itself is not solely responsible for dispersal of CBD functions. It undoubtedly encourages dispersal in the kind of way that public transport encourages concentration of functions at the core and nodes of the public transport system, but the degree of dispersal depends upon the level of freeway development centred on the city centre combined with the city centre's ability to provide adequate parking facilities.

IV.2. Freeway Development

In Hobart by the early 1960's signs of diminishing CBD accessibility were clearly apparent, owing to the spreading out of population at low density, the inability to provide an urban freeway system capable of handling the increasing volume of vehicular traffic, inner city congestion, inadequate parking facilities in the city centre, and declining importance of public transportation. In 1962 the government of Tasmania commissioned the U.S. firm of Wilbur Smith and Associates to prepare the Hobart Area Transportation Study, the first such transportation study in any Australian city. The Study (Smith, 1964) recommended a system of freeways that would allow the kind of access to the CBD which then appeared desirable. Basically, the Study proposed three radial freeways - the Southern, Eastern and Northern - connected to each other by an inner-city elevated distributer, the Northside Freeway. Owing to the enormous cost associated with urban highway development few of the recommendations had been implemented by the end of Stage I, and in 1969 the Department of Public Works commissioned Pak-Poy and Associates to review the 1964 Study.

Their report, 'Hobart Transportation Revision 1970' (Department of Public Works, 1970) sought to find alternative solutions to some of the major items recommended in the 1964 Study

which could effectively cater for the revised traffic demand at less cost. The 1970 Revision noted that the growth of vehicular traffic had been greater than that predicted by the 1964 Study owing to the higher growth rate of private vehicle ownership than had been anticipated. It predicted that the CBD would continue to provide employment for just over fifty percent of the workforce for the next twenty years, but anticipated that during the same period some out-migration of retail employment from the CBD could be expected. Since the 1964 Study, it was reported, the 'problems' of the regional shopping centres had become highlighted with shifting community interest. Just exactly what the 'problems' were or how the shift in community interest was measured was not made clear, but, in line with the objective of finding less costly solutions to the urban transportation problem, the 1970 Revision recommended a policy that deliberately gave more consideration to the outer regional areas than did the 1964 Study which, it was said, tended to consider the central city area as being the main focus of traffic generation.

The overall result has been that the central shopping district has become progressively less accessible to the outlying suburbs as travel time and traffic congestion have increased with growth of vehicular traffic and continued outward sprawl. If Jonassen (1955, 97) is right in claiming that the advantages of the suburban shopping centre result from the negative factors of the central shopping district - the inconveniences of getting there, traffic congestion, and lack of parking facilities in the central area - then Hobart's suburban shopping centres will have gained appreciable advantage from the inability of government to meet the cost of freeway development during the past decade.

IV.3. Parking

The shopper who has made the journey to the central shopping district has found inadequate parking facilities on reaching the CBD. Parking pressures were felt in the early 1950's and Hobart was the first city in Australia to introduce parking meters when, in 1955, the City Council installed 22 one hour meters (Hobart City Engineer's Department, 1971, 5). In 1959 Scott (1959, 305) observed that commercial parking, a characteristic CBD function in Melbourne and Sydney and in most American cities, was conspicuous by its absence in Hobart. Five years later, in their Transportation Study, Wilbur Smith and Associates were at pains to point out that adequate parking capacity in the central city is 'as essential to a balanced transportation system as is the provision of adequate street capacity to accommodate the automobile when it is in motion' (Smith, 1964, 19).

As a result they were commissioned to undertake a comprehensive parking survey and make recommendations to assist the City Council in planning its future parking development. Their report, Parking, City of Hobart, 1965 - 1975, published in 1965, identified an immediate need for 2500 additional spaces, that is, 25 percent extra spaces in the CBD and its fringe, with the most critical deficiency near the city's centre. The four blocks bounded by Argyle, Liverpool, Murray, and Macquarie Streets were identified as the major attraction for about 9600 parkers daily. This group was said to exert a demand for about 1500 spaces. When related to the supply of about 300 spaces, a deficiency of 1200 spaces was estimated. The report recommended an energetic programme of space development including plans that ensured additional parking spaces to serve short-term parkers. Failure to provide additional

spaces, the report warned, would result in decentralization of business and convenience goods shopping.

A major recommendation, the building of a multi-level parking garage in Argyle Street had been carried out by November, 1968. Response to other recommendations, however, was less impressive. A second multi-level parking garage on Bathurst Street was shelved and, after considerable debate, the City Council in 1974 called for tenders for a multi-level parking garage with a total of 642 spaces in the block bounded by Murray, Collins, Harrington and Liverpool Streets. Development of additional parking lots near the proposed Northside Freeway was limited owing to the slowing down of the highway programme, and six years after the report just half the number of additional meters recommended for that period had, in fact, been installed.

During 1970 the Hobart City Council decided to carry out an updating survey. The report, City of Hobart Parking Updating Study, 1971, includes an inventory of parking spaces which is summarized in Table 4.1. From this it may be seen that in the six years from 1965 to 1971 it had become necessary to extend the survey area as commuter parking had spread to the outer fringe area. Demand in the CBD had increased and from turnover figures it was estimated that the number of daily vehicle parking operations in the CBD had risen from approximately 27 000 in 1965 to 36 000 in 1971, a rise of 33 percent. At the same time kerb spaces had declined by about 10 percent in the CBD and fringe area. These losses were due to commercial usage, bus stops and access to property. 66.2 percent of the kerb spaces in the CBD and 21 percent of the kerb spaces in the fringe area were metered. Though more costly, this type of parking was preferred by the motorist, and there was evidence that over-saturation had led to reduced overall efficiency

as would-be parkers 'cruised' in search of a meter, so adding to traffic congestion, immobilizing kerbside parkers attempting to leave, and ultimately adding unduly to shoppers' walking distances and duration of visits.

TABLE 4.1

INVENTORY OF PARKING SPACES - CITY OF HOBART : 1965-71

City Area	Type of Space	1965		1971		Change 1965-1971	
		Spaces	%	Spaces	%	Spaces	%
CBD							
	Kerb	1 560	15.84	1 436	10.17	-124	-7.95
	Off Street	3 399	34.52	4 567	32.33	1 168	34.36
Total CBD		(4 959)	(50.37)	(6 003)	(42.50)	1 044	21.05
FRINGE							
	Kerb	3 114	31.63	2 793	19.77	-321	-10.31
	Off Street	1 773	18.01	3 492	24.72	1 719	96.95
Total Fringe		(4 887)	(49.63)	(6 285)	(44.49)	1 398	28.61
OUTER FRINGE							
	Kerb	Not Surveyed		1 297	9.18	-	-
	Off Street			541	3.83	-	-
Total Outer Fringe				(1 838)	(13.01)	-	-
TOTAL		9 846	100.00	14 126	100.00		43.47

Source

Hobart City Engineer's Department, (1971). City of Hobart Parking Updating Study 1971, Table 7, 20.

As the proportion of kerb spaces has declined so accessibility to the CBD in terms of accommodating the maximum number of short-term parkers per space provided has also declined. Average turnover on metered spaces was 15.0 and 15.1 per day in 1965 and 1971 respectively compared with average turnover of vehicles in all off-street spaces in the CBD of 1.6 in 1965 and 2.5 in 1971. A kerb space in 1971 therefore facilitated about six times the turnover of an off-street space. Mounting demand for parking in the city centre had resulted in a 56 percent increase in turnover in off-street parking space from 1965 to 1971. This had been encouraged by the application of progressive charges which favoured short-term parking at all City Council parks. Nevertheless, 35 percent of all available off-street spaces in the CBD were occupied by tenants having exclusive use of those spaces.

In spite of a 21 percent overall increase in the number of parking spaces in the CBD between 1965 and 1971 there is no doubt that the gap between demand and supply had actually widened in that period. The Parking Updating Study (1971, 9) questioned the validity of the concept of demand as defined by Wilbur Smith and Associates saying that it was 'imprecise' and 'elusive' and incapable of measuring 'the likely changes of parkers' behaviour in response to changes of environment, parking charges, parking availability and public transport policy'. Employing its own criteria the Updating Study, nevertheless, admitted that the deficiency gap had widened from 358 in 1965 to 615, (low estimate) or 1007, (high estimate) in 1971. How the figure of 358 for 1965 was computed was not made clear but, representing only one sixth of Wilbur Smith and Associates' estimated deficiency, the discrepancy simply serves to illustrate the later study's conservative assessment of the problem.

A much more realistic picture of parking deficiencies and trends in the central shopping district emerges when one examines both the 1965 and 1971 figures for parking in those city blocks bounded by Argyle, Bathurst, Harrington and Macquarie Streets. These are shown in Table 4.2 'Parking, Demand and Supply - Central Shopping District of Hobart 1965 - 1978', in which the surplus or deficiency for each block has been estimated. The only major change between 1965 and 1971 was in block 234 (see Figure 4.2) where the construction of the Argyle Street off-street garage turned a deficiency of 128 into a surplus of 317, otherwise there appears to be general overall agreement upon where the surpluses and deficiencies exist. Since different criteria were used in assessing surpluses and deficiencies the actual levels are not directly comparable, the 1965 estimates of deficiencies being 43.3 percent higher than the 1971 estimates, but there is remarkable agreement upon the projected rate of deterioration between supply and demand. Deterioration between 1965 and 1975 was estimated to be 5.8 percent per annum compared with deterioration between 1971 and 1978 of 7.7 percent per annum.

TABLE 4.2

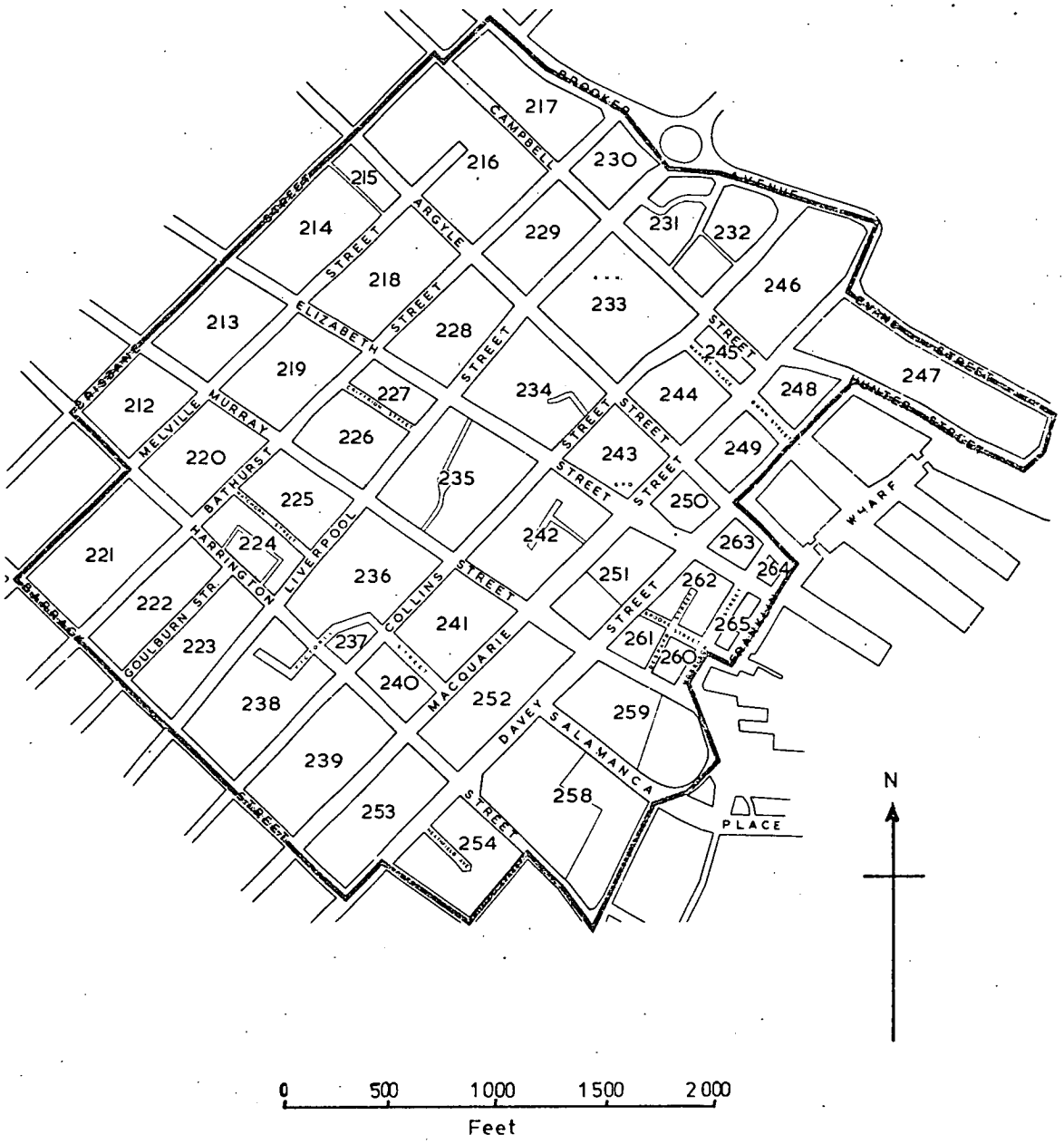
PARKING DEMAND AND SUPPLY - CENTRAL SHOPPING DISTRICT OF HOBART : 1965-1978

Block Number	Parking Study - 1965[a]				Parking Updating Study - 1971[b]			
	1965		1975		1971		1978	
	Surpluses	Deficiencies	Surpluses	Deficiencies	Surpluses	Deficiencies	Surpluses	Deficiencies
224	10			8	42		34	
225	99		72		78		68	
226		77		120		162		237
227		54		68		30		175
228		159		255		112		134
234		128		386	317		196	
235		632		851		741		768
236		151		207		135		159
237	52		10		15		12	
240	1			28	5			3
241		141		188		85		105
242		215		287		148		272
243		231		260		179		200
TOTAL	162	1 788	82	2 658	457	1 592	310	2 053
Overall Deficiency		1 626		2 576		1 135		1 743
Annual Rate of Deterioration		5.84%				7.65%		

Source (a) Smith, (1965). Tables A28 and A29.

(b) Hobart City Engineer's Department, (1971). Table 17.

CITY OF HOBART
CENTRAL BUSINESS DISTRICT



Boundary Survey Area

212 Block Number

FIGURE 4.2

(After Hobart City Council, (1968). City of Hobart Report on Land Use Survey Central Business District 1967 - 1968, Figure 1.)

The 1971 Report repeated the warning of the 1965 Survey that shoppers would be frustrated and would therefore be repelled by the deteriorating parking facilities, with resulting loss of retailing in the central shopping district, and quoted statistics supplied by the Commonwealth Bureau of Census and Statistics to show that between 1956/57 and 1961/62 the proportion of "Inner City" retail sales fell from 62 percent to 51 percent of that of Hobart and Suburbs. The authors of the Updating Study expressed concern that planning goals should take into account the welfare of the city as a business centre, yet six years after Wilbur Smith and Associates reported that there was an immediate need for 25 percent more spaces in the CBD and fringe area this goal had not been met. Furthermore, the rate of expansion had been greatest in off-street parking in the fringe area rather than close to the main city block which was the major generator of traffic.

Inability to come to grips with the parking problem results from an apparent unwillingness to face up to the scale of the task combined with a paralysing division of responsibility. The Hobart City Council authorized both the 1965 Parking Study and the 1971 Updating Survey in recognition of its responsibility for planning and development of parking facilities, yet the only mandate it claims to have as a parking authority (Sec. 708 of the Local Government Act 1962) relates to metered spaces and off-street parking facilities financed by moneys received by the Council from parking meters. Parking control of the kerbside other than metered spaces is vested in the Transport Commission. In 1971, 75 percent of all off-street parking was provided by private agencies and government, and the Council's proportion had grown from 10 percent in 1965 to 25 percent. Off-street spaces in the CBD had risen from

3399 in 1965 to 4567 in 1971, an increase of 34 percent. Of this increase government and private enterprise had contributed 49 percent and the Council 51 percent.

In spite of increased involvement the Council continues to see its role as one of supplementing 'CBD off-street parking in location and in measure best suited to meet parking deficiencies'; of performing 'a key function in maintaining a balance between supply and demand and in optimum locations' (Hobart City Engineer's Department, 1971, 11). It would like to encourage private enterprise to construct parking garages using private funds, but at the same time it notes that its own Argyle Street park was only 64 percent self-supporting after 2 years and 7 months, and that there is every likelihood that such a venture would need some form of subsidy and assurance of non-competitive parking prices from the Council.

Hobart is by no means unique in having to face the prospect of deteriorating central city parking facilities and consequent dispersal of retailing. Jonassen (1955, 97) regards parking as the CBD's greatest disadvantage when compared with suburban shopping centres and thus one of the major forces for decentralization of retailing. Berry (1963, 199) regards the totally inadequate supply of parking space for private automobiles as one of the major causes of blight in United States cities. So general is the problem of providing parking in the inner city that Baumol and Ide (1956, 99) suggest that, when constructing a model to account for decentralizing of retailing, it would be reasonable to regard difficulty of parking in cities as though this factor was a function of population density.

IV.4. Public Transport

Faced with the seemingly impossible task of implementing Wilbur Smith and Associates' recommendations (1964 and 1965) on freeway development and parking, and with no clear alternatives before them, it is not surprising that the authors of both the Hobart Transport Revision 1970 and the City of Hobart Parking Updating Study 1971 looked hopefully to a reversal of the trend away from public transportation to alleviate their problems. It was strongly recommended that positive steps should be taken with the object of reversing current trends in declining patronage of public transport and to provide an upgraded public transport system with higher standards of service, more efficient and effective operation and a more socially acceptable public image (Department of Public Works, 1970, 46). Unfortunately, Tasmania, like other Australian States, has witnessed a steady decline in the importance of its public transport system and there appears to be no noticeable change in this trend.

The relentless decline in the number of passenger journeys undertaken by public rail and road transport during the ten-year period ending 1970-71 is demonstrated in Table 4.3. Journeys undertaken by rail throughout the State during that period declined at an average rate of 5.2 percent per annum. The Hobart suburban rail service showed an even more dramatic decline. From 1964 to 1970 the average weekday patronage fell from 6100 to 2300, a decline of 10.38 percent per annum (Department of Public Works, 1970, 24). A survey carried out on a typical week day in April 1970 revealed that fewer than 1000 persons used Hobart Railway station as an arrival or departure point, five trains only carried 100 or more persons at any point on the service, 14 trains carried

fewer than 20 persons at any point on the service, and 2 trains carried no persons at any point on the service (Department of Public Works, 1970, 24). It is not surprising that this service incurs a substantial financial loss. Irrational reluctance to see the suburban rail service disappear altogether kept it going until 1974, despite repeated recommendations that the service should be terminated.

TABLE 4.3

PATRONAGE OF PUBLIC TRANSPORTATION - TASMANIA

1961-62 - 1970-71

Year	Tasmanian Government Railways		Metropolitan Transport Trust	
	Passenger Journeys ('000)	Percentage Change	Passenger Journeys ('000)	Percentage Change
1961-62[a]	1 816		25 576	
1962-63	1 558	-14.21	25 145	-1.69
1963-64	1 426	-8.47	24 756	-1.55
1964-65	1 340	-6.03	23 955	-3.24
1965-66[b]	1 304	-2.69	22 397	-6.50
1966-67	1 197	-8.21	22 248	-0.67
1967-68	1 087	-9.19	21 819	-1.93
1968-69	1 045	-3.86	21 246	-2.63
1969-70	907	-13.21	20 707	-2.54
1970-71	871	-3.97	20 797	+0.43
1961-62 - 1970-71		-52.04		-18.69
Average Annual Percentage Change		-5.2		-1.9

Source

(a) 1961-62 - 1964-65 C.B.C.S., (1968, 550).

(b) 1965-66 - 1970-71 C.B.C.S., (1973a, 381).

Though less dramatic, the decline in patronage of the Metropolitan Transport Trust bus service was nevertheless an inexorable 1.9 percent per annum. Between 1964 and 1970 several changes occurred in the public trolley and bus transport system serving Hobart. The MTT, which operated within a seven mile radius of the GPO, replaced the last of its trolley buses with motor buses in 1968. It reduced its routes from 65 to 51, increased its route mileage from 88.38 to 100.90 miles and increased its vehicle mileage from 3 988 435 to 4 056 464, that is, by 1.7 percent. During the same period annual patronage decreased steadily from 17 404 783 to 14 685 505, that is, by 15.62 percent, or 2.6 percent per annum. Average weekday patronage on the MTT services increased from 56 200 to 58 200, that is by 3 percent or 0.5 percent per annum. This slight increase probably reflected, to some extent, population growth in that period, some diversion from train to bus travel, and a slight improvement in service. Average weekday patronage of bus services operating beyond the MTT limits increased from 2700 to 4000, that is, by 48 percent or 8.02 percent per annum from 1964 to 1970 but, as this represented only about 5 percent of the total bus patronage, the overall gain per annum was 0.93 percent for an average weekday. This represents roughly half the annual growth rate of the population of Hobart.

From time to time it has been suggested that public transport authorities should implement promotional programmes including subsidizing of fares to shoppers (Public Works Department, 1970, 46). Fares, in fact, have been held low to encourage additional usage of public transport with the result that the MTT has operated at a financial loss throughout its existence. In 1960–61 the State Government's subsidy represented 23.04 percent of the MTT's

income (C.B.C.S., 1967, 589) and as patronage has declined so the subsidy has increased until in 1970-71 it represented 37.92 percent of the MTT's income (C.B.C.S., 1973a, 384). Discussions between MTT management and representatives of the Hobart Chamber of Commerce on the question of reduced fares for shoppers have come to nothing because retailers are unwilling to meet the considerable additional subsidy needed to provide such a service to the city centre. On the occasion of the opening of Claremont Village Shopping Centre and Eastlands Regional Shopping Centre the respective developers subsidized bus fares as part of a promotional programme but, on both occasions, the services had to be withdrawn before the end of the trial period owing to lack of support. The only other attempt to induce shoppers to use public transport is the free off-peak MTT bus service, introduced in January 1973, between the Hobart Railway Station and the main city block, the running costs of which are borne jointly by the Transport Commission and the Tasmanian Railways. Although no official report has yet been made, the public response appears to have been indifferent.

So far as the future of public transportation in general is concerned, estimates made by the Hobart Transportation Revision 1970 indicate an increase from the 64 000 in 1970 to 68 000 passenger-journeys on an average weekday in 1990. This represents a growth rate of 0.27 percent per annum, and is based upon the assumption that in the next 20 years there is bound to be a slow increase in the number of 'captives' who do not have a private car to make their journey, with the possibility of an increase in work trips diverted from private vehicles due to restricted parking opportunities. If this is a realistic prediction, then the present trend

away from public transportation must inevitably have the effect of reducing the importance of the central shopping district in the commercial structure of the city.

In 1964 public transport was the leading mode of travel for visitors to the central shopping block. The system then carried about 37 percent of all patrons to this core area (Table 4.4). Seventy-three percent of those who travelled by public transport came specifically to shop, and the vast majority of those who travelled by public transport came by MTT bus. It is clear from Figure 4.3 that the MTT serves the CBD almost exclusively and therefore constitutes a major force in maintaining the CBD's superior accessibility over other parts of the city. Furthermore, the daily inflow of MTT bus services into the central area is focussed on and immediately around the central shopping block. One third of all bus routes in operation in 1973 delivered passengers to the central shopping block. Twenty-six percent of all buses entering the CBD had as their destination the central shopping block, 50 percent delivered passengers to within one block of the central shopping block, and the remaining 24 percent delivered passengers to within two blocks of the central shopping block.

TABLE 4.4

MODE OF TRAVEL OF VISITORS TO THE CENTRAL SHOPPING BLOCK IN HOBART CBD : 1964 and 1972

Mode of Travel	Percentage of Visitors 1964[1]	Percentage of Visitors 1972[2]	Percentage Change
Public Transport	33.4	38.6	+1.6
Car	29.5	43.3	+13.8
Taxi	0.1	1.6	+1.5
Walk	33.4	16.5	-16.9
TOTAL	100	100	

Source

(1) Smith, (1965). Table 22.

(2) Courtney, T.D. (1972). Consumer Behaviour Survey - Central Shopping Block - Hobart, 1972. Unpublished survey.

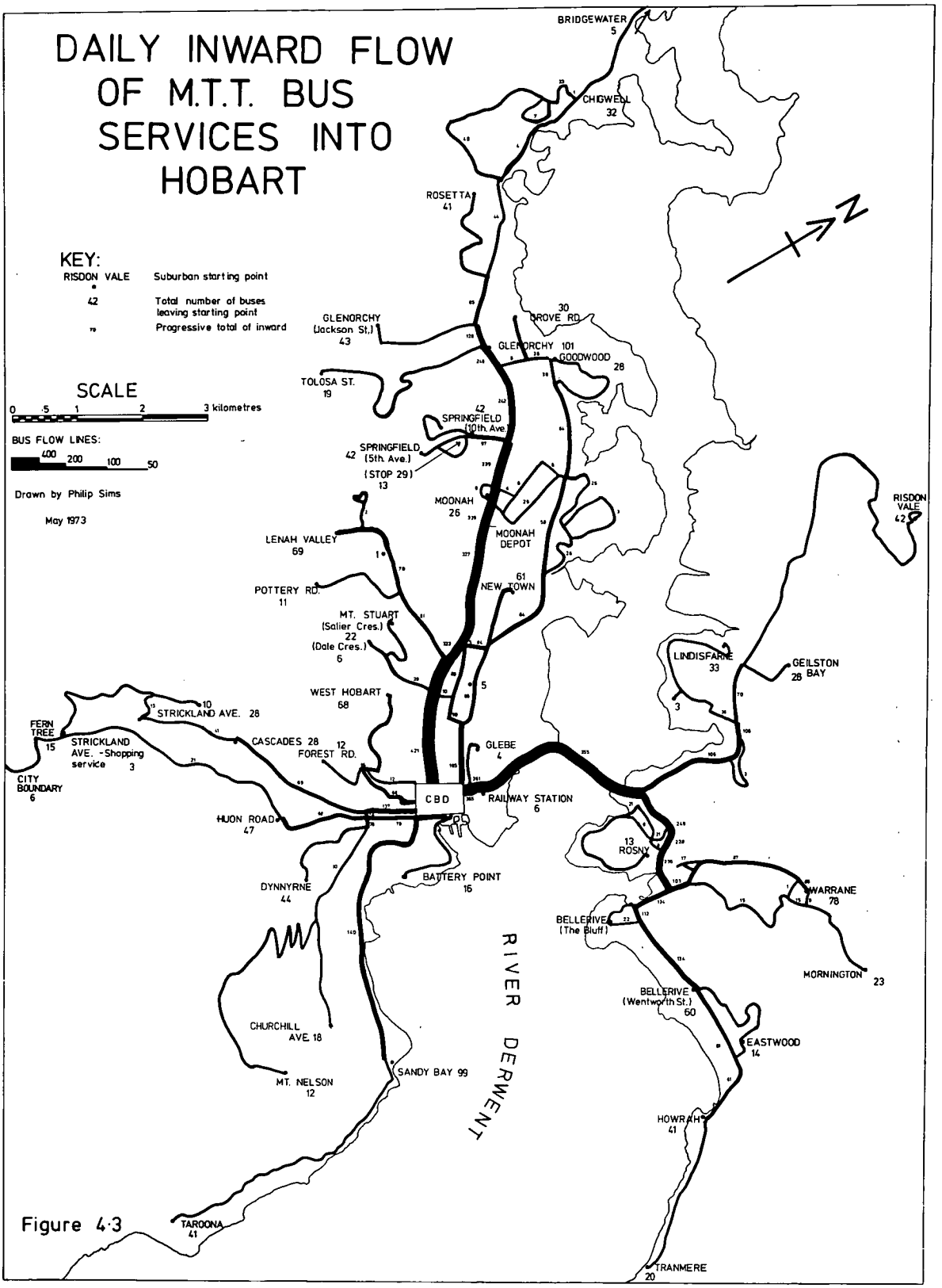

DAILY INWARD FLOW OF M.T.T. BUS SERVICES INTO HOBART
KEY:
RISDON VALE
Suburban starting point
42
Total number of buses leaving starting point
Progressive total of inward
SCALE
0 .5 1 2 3 kilometres
BUS FLOW LINES:
400 200 100 50
Drawn by Philip Sims
May 1973
N
BRIDGEWATER 5
CHIGWELL 32
ROSETTA 41
GLENORCHY (Jackson St.) 43
30 GROVE RD
GLENORCHY 101
GOODWOOD 28
TOLOSA ST. 19
42 SPRINGFIELD (10th Ave.)
42 SPRINGFIELD (5th Ave.)
(STOP 29) 13
MOONAH 26
MOONAH DEPOT
LENAH VALLEY 69
POTTERY RD. 11
61 NEW TOWN
MT. STUART (Salier Cres.) 22
(Dale Cres.) 6
WEST HOBART 68
10 STRICKLAND AVE. 28
FERN TREE 15
STRICKLAND AVE. - Shopping service 3
CASCADES 28
12 FOREST RD.
CITY BOUNDARY 6
CBD
GLEBE 4
RAILWAY STATION 6
HUON ROAD 47
DYNNYRNE 44
BATTERY POINT 16
13 ROSNY
WARRANE 78
BELLERIVE (The Bluff)
MORNINGTON 23
BELLERIVE (Wentworth St.) 60
EASTWOOD 14
CHURCHILL AVE. 18
MT. NELSON 12
SANDY BAY 99
RIVER DERWENT
HOWRAH 41
TARDONA 41
TRANMERE 20
LINDISFARNE 33
GEILSTON BAY 28
RISDON VALE 42

Figure 4·3

Any lessening of consumers' dependence upon public transport would have the effect of reducing the importance of the central shopping district in the urban retail structure. A survey carried out by the author in 1972 revealed that the private motor vehicle had become the leading mode of travel of visitors to the central shopping block, with 43 percent of all visitors using this form of transport (Table 4.4). Public transport, with 38 percent, had dropped to second position. A smaller proportion of visitors were arriving on foot, and it was clear that while the proportion of visitors travelling to the central shopping block by public transport had remained fairly constant, there had been a marked increase in individual mobility and consequently a lessening of consumers' dependence upon public transportation.

There seems little doubt that the declining role of public transport in Hobart is paralleling a trend common to most western cities. Only in countries with low standards of living and low levels of motor vehicle ownership is the per capita usage of public transport increasing (Smith, 1964, 54). High standards of living in Hobart in the 1970's have led to more complex personal movements. Members of car-owning families make their choice of transport on the basis of convenience, savings in time, and cost required to make the journey by car compared with public transport, and on total pattern of trips which are expected to be made during the day. For an ever growing number there appears to be no acceptable alternative to private travel.

IV.5. The Impact of Technological Advances upon Retailing in the CBD

a. Changing Communication Technology

Of all the technological advances to affect the commercial structure of Hobart over the past twenty years those concern-

ed with communication have probably had the greatest impact. We have seen how increasing car ownership has provided greater freedom to the consumer to shop where he pleases and to the entrepreneur to make his locational decisions free from the constraints of public transport. Greater freedom of movement has led to greater accessibility to all parts of the city region and to somewhat reduced accessibility to the CBD. Accessibility in the past has been achieved by movement of people, allowing them to engage in face-to-face contact. With further advances in communication technology much of this movement could be eliminated.

For instance, in the ten-year period 1961 to 1971 telephone communication in Tasmania improved from 19 telephones (C.B.C.S., 1967, 523) to 29 telephones (C.B.C.S., 1973a, 404) per 100 persons, an increase of 52.63 percent, and there is every reason to believe that the ratio of telephones to population will continue to improve since both New South Wales and Victoria had 35.5 telephones per 100 population (C.B.C.S., 1972a, 376). With 36 percent of all telephones operating from homes in 1971 the consumer enjoyed considerably greater freedom of access to retailers than ten years earlier. Similarly, with automatic telephone answering and recording machines associated with widespread advertising, home delivery services and personal accounts, entrepreneurs increasingly have access to consumers whom they never need meet face-to-face.

Already a great deal of the interaction that takes place in the city is made by this primitive sort of teletechnique. For instance, by dialling the number listed in telephone directories in Melbourne and Sydney, callers may hear a recorded message of up to 3 minutes, listing a variety of products at "special" reduced

prices at named retail stores (The Mercury, 15.6.1968, 9). Within the next twenty years transport of sound and picture will perhaps in quite a wide sense substitute personal transport and this, according to Allpass and others (Allpass, et al, 1967, 105-109) will lead to further dispersal of functions from the CBD.

IV.5.b. Consumer Credit

Dramatic growth of personal credit facilities in the past twenty years has appreciably extended the elasticity of demand, particularly with regard to more costly items such as motor vehicles, electrical, and household goods so that consumer demand is no longer strictly limited to the customer's ability to pay cash for his purchases. Instalment credit in Tasmania, including time payment, budget account and personal loan schemes associated with financing of retail sales of goods such as new and used motor vehicles, household and personal goods has risen from $34.28 million in 1960-61 (C.B.C.S., 1967, 535) to $58.41 million in 1970-71 (C.B.C.S., 1973a, 423), that is, $97.86 and $149.83 per head of population. Allowing for a 31.85 percent rise in the consumer price index over that period this represents an increase of 16.13 percent. At one time consumer credit was available only from firms operating in the CBD. Today, even petrol stations and supermarkets extend credit, so that this inducement to shop in the city centre has disappeared.

IV.5.c. Refrigeration

Refrigeration, both in shops and homes, has become the accepted norm with the result that, on the one hand, corner stores now commonly offer for sale items that previously were stocked

only by specialists such as butchers and delicatessens in shopping centres and, on the other, consumers are able to buy in bulk so reducing the frequency of shopping visits, thereby encouraging the growth of one-stop shopping centres and the retailing of goods in bulk. In 1958, when Purity Supermarket opened in Sandy Bay it found a deep freeze cabinet of 24 cubic feet adequate for its needs. At that time it sold 10 frozen chickens per week. In the following 10 years consumer tastes and buying habits changed quite dramatically so that in 1968, its three branches sold 5000 birds per week. When Purity opened its Shoreline branch, in 1968 it installed a 192 cubic foot unit for the display of frozen foods (The Mercury, 3.12.1968, 14).

IV.5.d. Mass Production, Advertising and Selling

Mass production has not only drastically reduced the price of manufactured goods, especially electrical, household goods and clothing, but it has also led to the universal acceptance of a comparatively limited range of branded pre-packaged goods with prices recommended or fixed by the manufacturer. Unless the consumer especially wants to exercise choice between these and lesser known brands there is little incentive to shop in the CBD. At one time the consumer could expect to get expert advice from salesmen in department stores and specialist shops in the CBD. Today, Parker (1968, 61) points out, increasing use of artificial fibres and plastics in manufactured goods and the marketing of more sophisticated scientific equipment make it almost impossible for the salesman to give knowledgeable advice about quality, durability and other characteristics of the goods he is selling. Consumer guides are now a more reliable source of information, and the CBD has lost one more attraction.

IV.5.e. Improving Efficiency in the Retail Trade

At any point in time a wide range of options is open to the entrepreneur who is looking for ways of maximizing profits. These include reducing costs by employing more efficient merchandizing techniques, increasing the scale of operation, changing the nature of the establishment in response to improving merchandizing technology and varying consumer tastes and behaviour, and changing location in response to changing consumer mobility. It is understandable, therefore, that the collective behaviour of entrepreneurs in following one or more of these courses of action has been responsible for the most important trends in retailing over the last two decades.

Hobart has witnessed a minor revolution in the retail industry in the last decade as technological innovations, well tried in western Europe, the U.S. and on the mainland of Australia have been introduced with the view to compensate for the steadily rising cost of labour.

One in every ten wage and salary earners is employed in retailing, and with labour costs steadily rising it is natural that retailers are driven constantly towards increased productivity as a means of maximizing profit and meeting the challenge of competitors. Briggs and Smyth (1965, 248-253) estimate that in Western Australia in 1965 between 4 and 9 percent of the total outlay of the retailer was absorbed by labour costs. Table 4.5 shows that in Tasmania in 1968-69 the cost of wages and salaries represented 9.24 percent of turnover or 'total takings' of retail firms. A more realistic comparison is that between wages and

salaries and what the Economic Censuses of 1968-69 calls 'value added'[*]. Essentially, "value added is the source from which establishments derive the surplus to meet wages and salaries, interest, rent, depreciation and overhead expenses of the enterprise, and to provide a contribution to the profits of the enterprise" (C.B.C.S., 1973c, 4). From Table 4.5 it may be seen that almost 40 percent of value added is absorbed by wages and salaries for the industry as a whole with certain categories, including department stores and establishments retailing household appliances, being 6 to 7 percent higher, and food shops generally being about 6 percent lower.

---

[*] This is calculated by summing sales of goods, goods withdrawn from stocks for the retailers own use, all operating revenue and value of closing stocks, less value of opening stocks, purchases and transfers in and selected expenses.

TABLE 4.5

WAGES AND SALARIES IN RELATION TO TURNOVER AND VALUE ADDED

FOR SELECTED RETAIL ESTABLISHMENTS IN TASMANIA: 1968-69

	($'000)			Wages & Salaries as a percentage of:	
Industry Class	Wages & Salaries	Turnover	Value Added	Turnover	Value Added
Department Stores	3 511	26 051	7 436	13.48	47.22
Variety	1 813	17 052	4 505	10.63	40.24
Supermarkets	859	13 225	2 053	6.50	41.84
Grocers & Tobacconists	745	16 327	2 783	4.56	26.77
Butchers	2 065	19 812	5 212	10.42	39.62
Fruit and Vegetables	188	2 470	559	7.61	33.63
Food & Cake Shops	99	679	196	14.58	50.51
All Food	6 466	97 526	19 053	6.63	33.94
Clothing	4 214	38 613	11 041	10.91	38.17
Household Appliances	2 578	18 384	5 574	14.02	46.25
Jewellers	316	2 694	998	11.73	31.66
Other Retailers	2 799	24 014	7 528	11.66	37.18
Pharmacies	1 221	9 733	3 422	12.54	35.68
Newsagents	902	8 278	1 986	10.90	45.42
Total Retail Establishments	31 456	340 360	79 380	9.24	39.63

Source

C.B.C.S., (1973c).

Unfortunately the Census of Retail Establishments and Other Services carried out in 1961-62 did not include numbers employed and salaries. Published estimates, however, indicate that many of the efforts at streamlining service have been successful. Table 4.6 shows that whereas retail sales increased by 48.04 percent in constant dollars from 1960-61 to 1970-71, employment in retailing increased by only 15.04 percent over the same period, so that sales per employee rose, on average, from $14 462.83 in 1960-61 to $20 484.62 constant dollars in 1970-71, an increase of 41.64 percent, or 4 percent per annum. At the same time the industry's share of the labour force in Tasmania dropped from 11.67 percent in 1965 (C.B.C.S., 1967, 431) to 10.26 percent in 1972 (C.B.C.S., 1973a, 541).

TABLE 4.6

INCREASING PRODUCTIVITY IN THE RETAIL TRADE IN TASMANIA : 1960-61 - 1970-71

	1960-61	1970-71	Percentage Increase
Retail Sales (excluding motor vehicles) ($'000,000 constant)	163.43[a]	201.97[1]	48.04
Employment	11 300[b]	12 000[e]	15.04
Sales per Employee ($'000) constant)	14.46	20.48	41.64

Notes

(1) Retail Sales (excluding motor vehicles) were $266.3 million in 1970-71[d]. The Retail Price Index rose from 471 in 1960-61[c] to 621 in 1970-71[f], that is, it increased by 31.85% over 10 years. Therefore Retail Sales in 1970-71 in constant dollars (with 1960-61 = 100) would be

$$\frac{266.3 \times 100}{31.85 + 100} = \$201.97 \text{ million}$$

using the formula

$$C = \frac{V \times 100}{I + 100}$$

where C represents 1960-61 values (constant),

V represents 1970-71 values, and

I represents the percentage increase in the retail price index from 1960-61 to 1970-71.

Sources

(a) C.B.C.S., (1967). 560.

(b) C.B.C.S., (1967). 432.

(c) C.B.C.S., (1973a). 556.

(d) C.B.C.S., (1973a). 349.

(e) C.B.C.S., (1972). 473.

(f) C.B.C.S., (1973a). 556.

Perhaps the most important labour saving innovation in post-war retailing has been 'self-service'. Originally confined to food, self-service has now been extended to durable consumer goods like television, washing machines and textiles. It has raised the standard of shopkeeping, affected employees and manufacturers, influenced the policies of other retailers, and expanded the average size of shops. In Britain, after a slow start, self-service in groceries expanded rapidly. Fulop (1968, 11) reports that from no more than 10 self-service shops in 1947, there were some 11 850 by the end of 1962, and about 20 500 by 1966. In the 1950's the supermarket - the larger and more comprehensive counterpart of the self-service shop - could be counted in 10's, by 1962 there were more than 1000 and by 1966 about 2625. Each supermarket had, on average, the equivalent turnover of twenty or thirty smaller shops and by 1966 the grocery turnover of supermarkets in the United Kingdom represented 44.1 percent of the total grocery trade.

Self-service, as an innovatory merchandising technique, became evident in Tasmania in the early 1950's. In 1956-57 30, that is 2.36 percent of the 1273 retail establishments which sold groceries claimed to be self-service stores (C.B.C.S., 1964, 39). These handled 8.79 percent of the total value of retail grocery sales. By 1961-62 161, that is 11.95 percent of the 1347 establishments engaged in retailing groceries were self-service, and between them handled 41.89 percent of the value of retail sales of groceries. While this appears to be an impressive beginning, the scale of individual operations was modest by comparison with the United Kingdom and the United States. Each self-service establishment had, on average, the equivalent value of sales of 4 small-

er shops. The supermarket, as a separate retailing class was recognized for the first time in the Economic Census of 1968-69 when the Australian Standard Industrial Classification defini... was used[*].

These and other innovations affecting the supply side of the retail system are taken up in greater detail in the section on the changing patterns of supply. For the moment, however, it is worth reflecting that the environmental factors covered in this section are all subject to fluctuation and change. Shortages of oil, resulting in increased costs of transport, would reduce personal mobility and therefore lead to more centralized retailing. Infusion of government finance into freeway development and inner city parking facilities would have the effect of making the CBD more attractive to motorized shoppers, as would expenditure of money on a public transport system focussed on the CBD. On the other hand, the introduction of mail-order shopping, almost non-existent in Hobart at present, could lead to further decentralization of retailing. The complex and subtle influences exerted by environmental factors bring about long-term changes in the system which affect the role of the CBD in the metropolitan retail structure of Hobart.

---

[*] To be classed as supermarkets establishments had to be engaged in retailing a wide range of groceries and other food with selling being organized on a self-service check-out point basis and with total annual retail sales of $500 000 or more (Commonwealth Bureau of Census and Statistics, 1969, 312).

C H A P T E R V

CHANGING PATTERNS OF SUPPLY

V.1. Introduction

In the last decade or two the metropolitan retail structure of Hobart has undergone dramatic changes. As consumers have become more numerous, more affluent and more mobile, and their behaviour patterns have changed in favour of one-stop motorized shopping for convenience and minor shopping goods and less frequent CBD shopping excursions for more specialized goods, so suppliers have responded by adjusting their mix of goods, their establishment size, and their location. In the process suburban retailing has grown and CBD retailing has declined in overall importance. This chapter covers (a) some theoretical considerations affecting the supply side of the intra-urban retail system, (b) a survey of recent developments in the metropolitan retail structure of Hobart, and (c) an assessment of the impact of these changes upon the CBD.

V.2. Some Theoretical Considerations Affecting the Supply Side of the Intra-urban Retail System

To bridge the gap between theory and reality and to gain a fuller understanding of the way in which decentralization of retailing affects the CBD let us examine a growth model consisting of a series of maps of trade areas plotted by means of an ICI FP-9 analog computer or field plotter of the kind described by Nunley (1971). This employs an electrically conductive sheet analog to simulate a market area, which we may assume to be a uniform plane over which consumers are evenly distributed. Retail establishments are represented by input pins whose values may be determined

by control settings, and trade area boundaries are determined by means of a probe, so eliminating the need for laborious mathematical calculations*.

Our model assumes (1) that suppliers are evenly distributed over the surface of the plane as in Figure 2.4 (which shows the spatial organization of retailers in a theoretical economic landscape); (2) that the urban area with which we are concerned is represented by the large hexagon containing a total of 13 suppliers, the outer six of which serve both the urban area and the rural area beyond the city; (3) that the central supplier "C", located at the site of the original settlement, has reached maximum establishment size and cannot increase either his range of goods or his volume of trade without changing his type of business, and thus, for comparative purposes, has an input value of 100;

---

* Trade area boundaries were determined in accordance with Reilly's (1931) laws of retail gravitation employing the "breaking-point" formula :

$$S = \frac{D}{1 + \sqrt{\frac{A}{B}}}$$

where S = the point of separation distance, from centre B, along a line drawn from establishment A to establishment B (that is, the break point),

A = the larger of the two establishments,

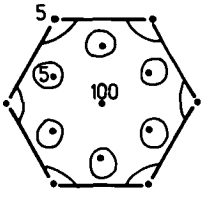
B = the smaller of the two establishments, and

D = the distance of establishment A from establishment B.

(4) that the greater the distance from "C" the higher the price of goods supplied by "C" and therefore the smaller the quantity of the good demanded by consumers (See Figures 2.2 and 2.3); (5) that the range of the highest order goods supplied by "C" covers the area defined as 'urban' in our model; (6) that our model starts at 'time period 1' when the urban population is such that peripheral surplus demand is just sufficient to support suburban suppliers of uniform size, who have located so as to minimize competition; (7) that over time these new suburban establishments grow at a uniform rate - their size depending upon the range of goods they are able to offer, size and density of population, elasticity of demand, constraints of establishment type, etc. - and in doing so they progressively capture more and more of the trade area of "C" until a state of equilibrium is reached when all trade areas are identical; (8) and that at any given time the trade area of a supplier will be a function of that supplier's establishment size in relation to the size of surrounding competitors and their distances from that supplier.

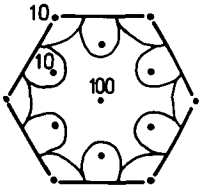
Model Illustrating the Change in Shape and Size of Establishment Trade Areas when Establishment Size Ratio is Varied.

a)



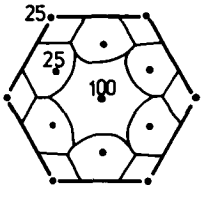
100:5 Establishment Size Ratio

b)



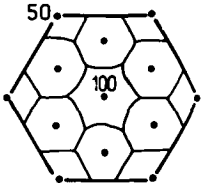
100 : 10

c)



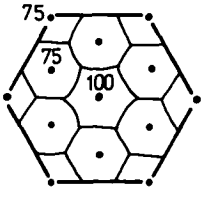
100: 25

d)



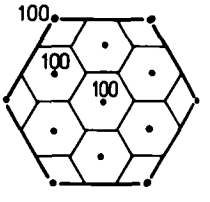
100: 50

e)



100: 75

f)



100:100

Figure 5·1

TABLE 5.1

TABULATION OF DATA FOR MODEL ILLUSTRATING THE CHANGE IN SHAPE AND SIZE OF ESTABLISHMENT TRADE AREAS WHEN ESTABLISHMENT SIZE RATIO IS VARIED

Theoretical Growth Model				Map Data			
Time Period	Total M.A. Retail Sales (Growth Rate = 40% per time period	Central Establishment Sales as a Percentage of M.A. Sales	Percentage Points Change in Central Establishments	Map	Ratio Central Establishments Size to Other Establishment's Size	Total M.A. Sales	Central Establishment Sales as a Percentage of M.A. Sales
0	100	100	-		100:0	100	100
1	140	71.43	28.57	a	100:5	140	71.43
				b	100:10	180	55.56
2	196	52.63	18.80				
3	274.40	36.44	16.19				
				c	100:25	300	33.33
4	384.16	26.03	10.41				
				d	100:50	500	20.00
5	537.82	18.59	7.44				
				e	100:75	700	14.29
6	752.95	13.28	5.31				
				f	100:100	900	11.11
7	1 054.14	9.49	3.79				

The model assumes a constant rate of growth in retail sales (Table 5.1), no growth or decline in the size of the central supplier, therefore growth of suburban establishments, so that the percentage of the metropolitan area sales made by the central establishment progressively declines over time. The rate of decline is most rapid in the early stages and gradually levels out. The series of six maps in our model (Figure 5.1) illustrate the change in shape and size of establishment trade areas at successive stages in the development toward an equilibrium state in which they is uniform distribution of establishments, each of which is surrounded by a regular hexagonal trade area.

Maps 5.1.a. and 5.1.b. show the early stages of development when the size ratio of central establishment "C" to other establishments is 100:5 and 100:10. In the initial stage (map 5.1.a.) trade area of "C" completely surrounds the trade areas of its smaller neighbours and spreads to the limit of the urban area, except in the most distant parts where the boundary of the trade areas of the six outermost establishments make gentle arcs. At a ratio of 100:10 (map 5.1.b.) "C" controls slightly more than 50 percent of the urban area's retail sales. The trade areas of the small centres surrounding "C" reach the outer limits of the urban area where they meet the trade areas of the outermost establishments, so confining the trade area of "C" to an irregular shape in the centre of the city.

When the ratio is reduced to 100:25 (map 5.1.c.) the central establishment controls only $\frac{1}{3}$ of the city's sales, and its trade area which is greatly reduced takes on the shape of a six-pointed star extending its influence along the lines that divide the trade areas of its smaller neighbours. By this stage

the boundaries between outer and inner suburban establishments have become straight lines, indicating the shape of the final trade area pattern.

Successive stages in the development of a regular hexagonal pattern of trade areas are shown in maps 5.1.d., 5.1.e. and 5.1.f. as the central establishment's share of the urban area's trade drops from 20 percent to just over 10 percent. The final stage (map 5.1.f.) showing establishments of uniform size, surrounded by regular hexagonal trade areas of uniform size, illustrates the equilibrium state in which the entire urban area is served as efficiently as possible.

In reality, establishments of the same type are not evenly spaced, nor are they of uniform size so that, in practice, trade areas are irregular in shape and are constantly changing as the result of competition. In aggregate, however, it is true that establishments supplying lower order goods, with low thresholds and small range, form networks in which establishments are more closely spaced and form trade areas which are smaller than do establishments supplying higher order goods. Furthermore, retailers tend to form clusters with complementary and competing retail types so that, in practice, individual retailers form part of the intra-urban central place system.

In Hobart, in 1969, these clusters of establishments, or retail centres, formed a well defined hierarchical system (Table 5.2) in which volume of trade, number of establishments and number of establishment types varied exponentially from one level to other levels in the system. As Hobart grows it is able to support higher order goods, which initially can only be supplied by the CBD because of its accessibility to the whole metropolitan area, but

with further growth, threshold requirements for those goods are met in sectors of the city, and establishments locate in the largest suburban shopping centres to supply demand. Similarly, as Hobart's population grows, goods, whose threshold requirements could only have been met at the CBD and regional centre levels at an earlier stage, find the necessary threshold at the community centre level, and so on. The model, illustrating the changing relationship between one well-established, centrally located establishment and growing suburban establishments of the same type, therefore demonstrates the changing relationship between CBD establishments and suburban establishments of the same type.

TABLE 5.2

THE HIERARCHY OF RETAIL CENTRES IN HOBART - 1969

Level of Centre	Type of Centre	Number of Centres	Types of Establishment		Number of Establishments		Retail Sales ($million)	
			$\bar{x}$	σ	$\bar{x}$	σ	$\bar{x}$	σ
I	CBD	1	37	-	612	-	54.4	-
II	Regional	3	27.33	1.53	112.33	28.01	11.07	1.25
III	Community	7	18.00	3.92	43.29	14.92	4.03	1.25
IV	Neighbourhood	29	5.10	3.29	8.31	6.81	0.62	0.54
V	Convenience	96	1	-	1	-	0.06	-

Source

Table 2.2.

V.3. Analysis of Trends by Establishment Type

In the seven-year period from 1961-62 to 1968-69 Hobart recorded a population growth of 11.54 percent (Table 3.7) which was reflected in an overall growth of 3.25 percent in the number of retail establishments in the metropolitan area and a decline of 14.35 percent in the number of inner city retail establishments (Table 3.29). The form of recording data in 1961-62 and 1968-69 unfortunately prevents thorough analysis of trends by establishment type. Nevertheless, examination of Table 5.3 shows that all but two of the establishment types for which comparable data were available were less centralized in 1968-69 than they had been in 1961-62. At the time of the 1968-69 Economic Censuses only 10 of the 32 retail establishment types in Hobart remained centralized in the sense that over 50 percent of their numbers were located in the CBD.

TABLE 5.3

RETAIL ESTABLISHMENTS RANKED ACCORDING TO LEVEL OF CENTRALIZATION

HOBART : 1961-62 and 1968-69

Rank (1968-69)	Establishment Type	1961-62[1]			1968-69[2]			Percentage Change (1961-62 - 1968-69)	
		H. & S.	I.C.A.	% in I.C.A.	M.A.	I.C.A.	% in I.C.A.	M.A.	I.C.A.
1.	Photographic Equipment			-	6	6	100		
2.	Department Stores			-	7	6	86		
3.	Musical Instruments			-	6	5	83		
4.	Jewellers			-	28	22	79		
5.	Men's Clothing				29	19	66		
6.	Electrical Appliances				12	7	58		
7.	Women's Clothing				70	40	57		
8.	Household Appliance				29	16	55		
9.	Sporting Goods			-	24	13	54		
10.	Nurserymen & Florists			-	19	10	53		
11.	Fruit and Vegetables	39	15	38	24	12	50	-38.46	-20
12.	Footwear	33	19	58	29	13	45	-12.12	-31.58
13.	Confectionery	88	29	33	59	25	42	-32.95	-13.79
14.	Furniture & Floor Coverings	27	-	-	25	10	40	-7.41	-
15.	Antiques			-	18	7	39		
16.	Fabrics & Household Textiles			-	13	5	38		
17.	Bread & Cakes	39	12	31	29	10	34	-25.64	-16.67
18.=	China, Glassware etc.	16		-	16	5	31	0.00	-
18.=	Newsagents	49	19	39	49	15	31	0.00	-21.05
20.	Tyre & Battery			-	11	3	27		
21.	Pharmacies	51	18	35	61	15	25	+19.61	-16.67
22.	Motor Vehicles (New)			-	64	15	23		
23.	Not Elsewhere Classified	144	75	52	36	8	22	?	?
24.=	Liquor Stores			-	5	1	20		
24.=	Fish, Chips & Hamburger			-	20	4	20		
26.=	Variety			-	14	2	14		
26.=	Motor Cycle, Boat, Caravan			-	14	2	14		
28.	Butchers	110	14	13	120	15	13	+9.09	+7.14
29.	Supermarkets			-	10	1	10		
30.	Grocers & Tobacconists	284	18	6	290	27	9	=2.11	=50.00
31.=	Motor Vehicles (Used)			-	37	2	5		
31.=	Service Stations			-	132	6	5		
	TOTAL	1 353	425	31	1 392	364	26.06	+3.25	-14.35

Notes

H. & S. = Hobart and Suburbs

M.A. = Hobart Statistical Division

I.C.A. = Inner City Area

Sources

(1) C.B.C.S., (1964f). Table 21.

(2) C.B.C.S., (1973d). Table 1.

The most centralized establishment types in 1968-69 had high threshold requirements either because of their size and volume of trade (department stores, electrical, and household appliance stores), or because of their high level of specialization (photographic equipment, musical instrument, jewellers, sporting goods and florists), or because of their dependence upon fashion (men's and women's clothing). Next came a group of establishments which sold widely advertized, standardized, mass produced commodities (such as footwear, furniture and floor covering, fabrics and household textiles, and china, glassware, etc.) whose thresholds could be met in the regional and community retail centres in addition to the CBD. Then came those establishments that served the more frequent needs of the neighbourhood (newsagents, pharmacies, butchers, and supermarkets), and last came the corner store (grocers and tobacconists), most ubiquitous of all establishments, occupying the lowest level of the central place hierarchy, and serving the day-to-day needs of customers within a few minutes walking distance.

Scattered through the list are a few establishment types which have special locational requirements. For instance, specialist establishments dealing in food (fruit and vegetables, confectionery, and bread and cakes) serve both the suburban shopper and the city worker and are therefore higher on the list than other foods. New and used car firms, because of their space requirements, locate on or close to traffic routes leading to the CBD rather than in the CBD itself, and are joined in the inner mixed zone by establishments selling car tyres and batteries, and antique and secondhand goods dealers who cannot afford the higher rents demanded for more central locations. Finally, at the bottom of the list and therefore exhibiting the highest level of dispersal is the traffic-oriented petrol service station.

Part of the difficulty experienced in analysing changes in the distribution of establishments in Hobart between the Economic Census of 1961-62 and that of 1968-69 arises from the fact that retailers change not only their location but also their size, their mix of goods and their merchandizing techniques in response to changing consumer behavior and in accordance with the principles of profit maximization. Some establishment types such as 'general store' and 'draper' have virtually disappeared over the past decade or two, while others, such as the 'supermarket' and the 'K-mart' are new to the retailing scene, as is the integrated planned shopping centre. Each of these has had a significant impact upon the CBD in the last decade, and is therefore given detailed consideration in the following sections.

V.4. The Impact of Supermarkets upon the CBD

In 1968-69 there were 14 supermarkets in Tasmania (see Table 5.4). These represented 1.39 percent of the establishments in the grocery trade but handled 20.29 percent of the total grocery retail sales. Each supermarket handled, on average, the retail sales of 18 smaller grocers. Compared with Australia as a whole, where supermarkets accounted for 2.78 percent of all establishments engaged in retailing groceries and handled 32.32 percent of the retail sales, Tasmania was lagging behind in the trend towards supermarkets. Table 5.5 confirms that in 1968-69 Tasmania had a greater share of the total number of establishments and persons employed in retailing groceries than one would expect from its population size, the reason being that Tasmania had about 40 percent more small grocers and about 30 percent fewer supermarkets compared with Australia as a whole. It may well be that Tasmania will continue to have a higher than national proportion of small grocers in the future be-

cause of the comparatively small and dispersed nature of its population, but the signs in 1968-69 were that Tasmania was in the process of a dramatic shift towards supermarkets.

TABLE 5.4

THE ROLE OF THE SUPERMARKET IN THE GROCERY TRADE :
AUSTRALIA AND TASMANIA, 1968-69

	Supermarkets	Grocers & Tobacconists	Total	Supermarkets Share as %	Supermarkets	Grocers & Tobacconists	Total	Supermarkets Share as %
Number of Establishments	657	22 947	23 604	2.78	14	996	1 010	1.39
Persons Employed	28 296	76 844	105 140	26.91	505	3 399	3 904	12.94
Turnover ($'000)	641 027	1 351 324	1 992 351	32.17	13 225	52 468	65 693	20.13
Value Added ($'000)	102 716	217 253	319 969	32.10	2 053	8 667	10 720	19.15
Retail Sales ($'000)	634 068	1 327 697	1 961 765	32.32	13 191	51 807	64 998	20.29

Sources:

(1) C.B.C.S., (1973b). Table 1.
(2) C.B.C.S., (1973c). Table 1.

TABLE 5.5

A COMPARISON OF THE GROCERY TRADE BY ORGANIZATION : AUSTRALIA AND TASMANIA, 1968-69

	Australia[1]	Tasmania[2]	Tasmanian Share %	Tasmanian Share % Variation from Expected
Population[a]	12 388 192	386 600	3.12	0.00
Supermarkets				
Establishments	657	14	2.13	-31.73
Persons Employed	28 296	505	1.78	-42.95
Turnover	641 027	13 225	2.06	-33.97
Value Added	102 716	2 053	2.00	-35.90
Retail Sales	634 068	13 191	2.08	-33.33
Grocers & Tobacconists				
Establishments	22 947	996	4.34	39.10
Persons Employed	76 844	3 399	4.42	41.67
Turnover	1 351 324	52 468	3.88	24.36
Value Added	217 253	8 667	3.99	27.88
Retail Sales	1 327 697	51 807	3.90	25.00
Total Grocery Trade				
Establishments	23 604	1 010	4.28	37.18
Persons Employed	105 140	3 904	3.71	18.91
Turnover	1 992 351	65 693	3.30	5.77
Value Added	319 969	10 720	3.35	7.37
Retail Sales	1 961 765	64 998	3.31	6.09

Sources:

(1) C.B.C.S., (1973b). Table 1.

(2) C.B.C.S., (1973c). Table 1.

From the consumer's point of view supermarkets offer many advantages including speed of service, opportunity of handling products without obligation to buy, chance for second thoughts, low prices without wasting time searching for bargains, high standards of hygiene, and itemized bills. Supermarkets offer a wide range of goods, allowing one-stop shopping with adequate parking usually in a convenient location close to home. Although most accentuate cut prices, many try to cultivate an air of luxury at the same time in their decoration, and by providing coffee bars, pram parks, and so on, to add to their attractiveness.

Supermarkets have considerable advantage over small grocers because of their scale of operation. Not only are they able to operate on a mark-up of about 4 to 5 percent on most items sold but they can afford to have a flexible pricing policy selling a wide range of specials below the wholesale price to attract custom. The extent to which this sales technique is employed is illustrated by a survey of the advertisement pages in The Mercury on a typical Wednesday in June, 1974. Retailers collectively bought 23.6 pages or 51.4 percent of the entire newspaper. Of this, retailers of groceries took 73.4 percent, with five department and variety chain supermarkets accounting for 64 percent of all grocery space. Faced with this aggressive pricing and advertising policy small grocers have formed themselves into co-operative buying and advertising groups. These collectively accounted for 25 percent of all space bought by retailers of groceries. The remaining 11 percent was shared almost equally between the Hobart based independent chain, Purity, and other independent grocers.

The advent of supermarkets and bulk buying chains on the Hobart economic scene has made grocery retailing a highly competitive field, with the result that the average retail prices of

selected food and grocery items sold in Hobart in 1968 were slightly lower than those in Melbourne (0.6%) and only marginally higher than those in Sydney (3.9%) (C.B.C.S., 1970.b, Appendix, Section I). It has also led to the elimination of the less efficient small grocer. Table 5.6.b. shows that there was a 20 percent decline in the number of establishments retailing groceries in Hobart between 1961-62 and 1968-69 while, at the same time there was a 143 percent increase in retail sales of groceries, resulting in a growth of 203 percent in the retail sales per establishment. The message 'get big or get out' had spread throughout Tasmania (Table 5.6.a.) where a 25 percent drop in number of establishments retailing groceries was recorded between 1961-62 and 1968-69, though grocery sales almost doubled and sales per establishment increased 161 percent during the same period. On average, sales per establishment in Hobart were 33 percent greater than the state average, suggesting not only that the rest of the State was lagging behind in adopting the merchandizing techniques which were responsible for this trend, but also that the scale of operation was a function of population size and density of the trade area.

TABLE 5.6

TRENDS IN THE GROCERY TRADE

ESTABLISHMENTS AND RETAIL SALES : 1961-62 - 1968-69

(a) Tasmania

	1961-62[1]	1968-69[2]	Percentage Change
Establishments	1 347	1 010	-25.0
Retail Sales ($'000)	28 554	64 998	127.6
Retail Sales in '000 Constant Dollars [1]	28 554	55 864	95.6
Sales per Establishment ($'000)	21.2	55.3	160.9

(b) Hobart

	1961-62[1]	1968-69[3]	Percentage Change
Establishments	375	300	-20
Retail Sales ($'000)	9 074	25 671[2]	182.9
Retail Sales in '000 Constant Dollars[1]	9 074	22 063	143.2
Sales per Establishment ($'000)	24.20	73.5	203.7

Notes

(1) Retail Sales for 1968-69 are given in constant dollars to allow for 16.35% rise in the retail price index between 1961 and 1968 (471 to 548). For formula see Appendix A.

(2) Data on retail sales for 2 supermarkets in statistical retail area 6003 were not published. The average retail sales, that is, $946,130 was added for each of these to allow computation of this table.

Sources

(1) C.B.C.S., (1964f). 39.

(2) C.B.C.S., (1973c). 9.

(3) C.B.C.S., (1973d). 5.

The vast increase in sales by establishments retailing groceries reflects the tendency, particularly on the part of supermarkets, to compensate for falling margins on food lines due to competition by widening their range of goods to capture lines with profitable mark-ups from other trades. Baumol and Ide (1956, 99) believe that the advantages gained by the relative ease with which consumers can get additional variety of items resulting from greater range of choice, layout arrangement and self-service will be lost if supermarkets proliferate the variety of items held. They admit that, to some extent, losses resulting from excessive range might be offset by impulse buying of goods not expected to be found by the customer. So far as Hobart is concerned, there is reason to believe that the critical level to which Baumol and Ide refer has yet to be reached, and that the trend is one of increasing scale of operation. The first supermarkets established in Hobart in the late 1950's were about 4000 square feet. Those built a decade later were about 10 000 square feet, while the largest, built in early 1970's exceed 20 000 square feet in size.

The Economic Census of 1968-69 showed that of the 14 supermarkets in Tasmania 10 were situated in Hobart, one of these being situated in the inner city. A survey undertaken by students of Hobart Teachers College in 1970 indicated that another 7 called themselves supermarkets but had fewer than 10 employees. By 1973 there were 40 establishments in Hobart retail statistical area listed under the category 'supermarket' in the pink pages of the telephone directory. More than half of these must be regarded as ambitious corner stores, for in order to satisfy the scale requirement of the Economic Census it would have been necessary for a firm to employ about 14 persons.

In 1973 a more detailed survey, using this employment criterion to identify 'genuine' supermarkets, found 15 (Figure 5.5). The three largest supermarkets, each over 10 000 square feet and employing from 50 - 100 persons, were owned by the mainland Variety chains, Coles and Woolworths, which had entered the Tasmanian supermarket scene within the last 10 years. Between them they accounted for roughly half the sales floor space, and half the number of persons employed by supermarkets in Hobart. Located so as to minimize competition between each other, the Coles supermarkets were situated in established shopping centres in Glenorchy to the north of the city, and in Sandy Bay to the south of the city, while Woolworths supermarket was situated in the newly established Rosny Regional shopping centre on the eastern shore. These three presented formidable competition in their respective regions. Their size allowed them to carry a range of products which genuinely made them one-stop shopping centres. By concentrating upon their own brands and the most popular brands with nation-wide reputation, which they bought direct from the manufacturer, they were able to offer discount prices which smaller firms found difficult to meet. Coles alone bought two full pages or about 10 percent of all retail advertising space in a typical Wednesday edition of The Mercury to publicise its 'specials' and 'jackpot' prizes. Growth of these three largest supermarkets appears assured. The two in existence in 1970 registered growth of 25 percent and 66 percent in numbers employed between the first survey in 1970 and that of 1973.

Next in scale were the two independents, Bay Supermarket of Sandy Bay and McShanes of Glenorchy, in the 5000 - 7500 square foot range with 30 - 35 employees. Both are situated in unplanned

shopping centres, have been in the grocery trade for over ten years, and have progressively adopted more efficient merchandising techniques. Neither considers it has reached the optimal size but neither has plans for expansion. The newest supermarkets to enter the field are about 20 000 square feet in extent and the high cost of setting up a modern supermarket is probably well beyond the resources of an independent. For the Bay Supermarket survival, rather than expansion, appears to be the major concern for it registered a drop of 46 percent in number of employees between 1970 and 1973, during which time Coles New World Supermarket, of roughly twice the size, was established on the opposite side of the road to take advantage of homeward-bound traffic. McShanes, on the other hand, increased its number of employees but is confined physically and has restricted parking facilities. In order to provide a home delivery service McShanes employs a private contractor. Both independents belong to a co-operative buying group and advertise jointly with that group and independently.

The remaining five belong to the privately owned Hobart based Purity Food Market Company which operates a chain of ten supermarkets in the Hobart region, eight in established shopping centres and two in newly established planned shopping centres in the outer suburbs of Kingston and Howrah. Their size varies from 7000 square feet with 26 employees at Moonah to about 4000 square feet in the outer suburbs. One of the smallest, with 3800 square feet, is the sole supermarket survivor in the inner city.

As a group their growth pattern appears irregular. The largest, in Moonah, with parking space for 500 cars registered a drop of 13 percent in employment between 1970 and 1973, claims not to have reached optimal size but plans no expansion until there is

further growth in the population of its trade area. Purity (Howrah), part of the Shoreline planned shopping centre in the rapidly growing eastern shore suburb of Howrah exhibited the largest growth in employment of the chain. On the other hand Purity (Glenorchy), the only suburban supermarket without a car park, and situated across the road from Coles New World Supermarket with two and a half times its sales area, showed a drop of almost 40 percent in employment and considers that, in the circumstances, it has reached its optimal size. Further investigation revealed plans to replace this establishment with a new supermarket slightly larger than its rival, Coles.

No growth was registered by the city branch of Purity in Liverpool Street adjacent to the principal shopping block. It offers no parking facilities and attributes its survival partly to the fact that it caters specifically for the day-to-day needs of office workers and partly to the fact that its competitors in the inner city are either ceasing business or reducing their scale of operation. Of those central city stores retailing groceries in 1970 the department store, Myer, has closed its basement food market, the second department store, Fitzgerald, has reduced its grocery sales area, and Rounds, the independent supermarket in Elizabeth Street ceased business by the end of 1974.

By the end of 1974 Purity planned to have added three more supermarkets to their chain, two in the outlying suburbs of Rokeby and Risdon Vale where they will operate from rented sites in planned shopping complexes, and the third, a 10 000 square foot venture, in Glenorchy. Their success in the highly competitive retailing environment of today is attributable to a combination of factors. Their scale of operation allows them to buy direct from

manufacturer and handle their own wholesaling and distribution from a central location in New Town. Many of Purity's supermarkets operate from renovated buildings so reducing its overheads compared with Coles and Woolworths. Four of the ten supermarkets operate from rented premises, thus freeing capital for expanding the scale of operation. As a result the Purity chain is able to offer goods at prices as low as those of Coles and Woolworths. Local knowledge allows them to identify areas where there is a peripheral surplus of demand and to set up small scale operations in areas where growth is predictable. And finally, their total scale of operation is now such that they are prepared to meet the challenge of the mainland variety chains by constructing new supermarkets of the same or larger scale.

In an attempt to meet the challenge of the supermarkets over half of all independent grocers belong to a co-operative buying group. Ninety, or roughly half, belong to a co-operative known as General Wholesale Grocers. These advertise under the names Foodmaster, Foodland and W.P.L. according to their size and service. Five in the supermarket class with sales of meat, fruit and vegetables and smallgoods belong to the first, 28 smaller shops, some of which sell meat and vegetables, belong to the second and about 60 corner store grocers belong to the third class. A fourth class called Four Square handled the trade of the smallest shops until it went into liquidation in Southern Tasmania in 1973. A further 75 smaller grocers, mainly operated by southern European migrants, belong to the co-operative buyers group Saveway Foods Pty. Ltd.

Membership of a co-operative buying group, though affording some advantage in wholesale costs and advertising, is by no

means a guarantee of success. The small grocer is left with slower selling items, and can offer only a limited range of goods with restricted choice in any given commodity. Collectively the group is unable to take full advantage of bulk buying of a restricted range of goods because of the different sizes and preferences of individual firms. Seldom can the small grocer offer parking facilities, and those who offer free home delivery as a special inducement incur costs that no supermarket in Hobart is prepared to bear. Unlike the chain, which is able to adopt a flexible policy with regard to its total undertaking, a co-operattive buying group has no corporate policy and in the present economic environment its individual members are highly vulnerable.

The impact of supermarkets appears to have been felt as much by suburban retailers as by CBD retailers. Between 1961-62 and 1968-69, at a time when suburban sales of groceries rose by 98.13 percent (in constant dollars), the number of suburban establishments retailing groceries dropped 5 percent (Table 5.7). Small inefficient grocers in less advantageous locations throughout the city were being eliminated, but the impact of the supermarket was not uniform throughout the city. Older inner areas such as South Hobart, West Hobart and North Hobart, with aging and declining populations and therefore declining incomes, where there was lack of private transport, and where technological changes could not be supported, attracted comparatively few supermarkets. Similarly, the newer, small, isolated suburbs such as Risdon Vale, Mornington and Rokeby, developed by the Housing Department for lower income earners, appear to have been unattractive to supermarkets.

In contrast, growth in both number and size of super-

markets has been most pronounced in newly established areas where there has been a large increase in population and therefore spending, but where there was a lack of existing facilities. Smaller supermarkets have favoured these locations with the view to growing in scale as the population grows. Established suburbs such as Sandy Bay and Glenorchy, where small supermarkets have been longest established and are now the centres of considerable trade areas, have been the scene of renewed supermarket activity with the construction of new establishments in excess of 10 000 square feet.

TABLE 5.7

RETAIL OF GROCERIES IN HOBART AND SUBURBS : 1961-62 and 1968-69

Date	Number of Establishments Retailing Groceries				Retail Sales ($'000)			
	Inner City	Remainder of City	Total	% in Inner City	Inner City	Remainder of City	Total	% in Inner City
1961-62[1]	38	337	375	10.13	1 894	7 180	9 074	20.87
1968-69[2]	39	320	359	10.86	2 525	16 552	19 077	13.24
% Change	2.63	-5.04	-4.27		33.32	130.53	110.24	
Constant $[1]								
1961-62					1 894	7 180	9 074	20.87
1968-69					2 170	14 226	16 396	13.23
% Change					4.57	98.13	80.69	

Notes

(1) Retail Sales for 1968-69 are given in constant dollars to allow for 16.35% rise in the retail price index between 1961 and 1968 (471 to 548). For formula see Appendix A.

Sources

(1) C.B.C.S., (1964f). 31.

(2) C.B.C.S., (1973d). 15.

By 1961-62 Hobart's grocery trade was already very largely decentralized. At that time the CBD handled 20.87 percent of the metropolitan area's grocery sales, but by 1968-69 the impact of supermarkets had reduced this to 13.24 percent (Table 5.7). Whereas the number of CBD establishments remained practically unchanged, retail sales were up 14.57 percent compared with those of 1961-62. In view of the fact that growth in grocery sales for the city as a whole exceeded 80 percent between 1961-62 and 1968-69, it would appear that the CBD had approached a state of equilibrium in which any increase in grocery sales in future would result chiefly from the growth of specialty shops serving the entire metropolitan area.

V.5. The Impact of Planned Shopping Centres on the Trade of the CBD

The planned shopping centre, like the supermarket, is a comparatively new phenomenon in Hobart, but its effect upon the metropolitan retail structure of the city has been dramatic. Constituting a response to such changing environmental factors as movement of population to the suburbs, change in consumer buying habits, increasing use of the car, increasing traffic congestion and inadequate parking in the CBD, the shopping centre will undoubtedly prove to be one of the most important spatial variables to affect the amount and percentage of the metropolitan area retail sales retained in Hobart CBD.

A shopping centre may be defined as 'a group of commercial establishments, planned, developed, owned, and managed as a unit, with off-street parking provided on the property (in direct ratio to the building area) and related in location, size (gross floor area) and type of shops to the trade area that the unit serves - generally in an outlying or suburban territory' (Urban Land In-

stitute, 1957). Essentially the shopping centre is a post-World War II phenomenon which originated in affluent, motorized United States. It appeared in Australia for the first time in 1957 when the first three were constructed in Queensland, Victoria and New South Wales (Zipfinger, 1963), but it was not until November 1965, with the opening of Rosny Regional Shopping Centre on the Eastern Shore, that Hobart had its first genuine shopping centre.

The success of shopping centres is illustrated by the fact that whereas in the United States in 1953 there were 153 planned centres, seven years later there were 4000, including 95 regional centres each with over 400 000 square feet of floor space, 308 community centres with between 200 000 and 400 000 square feet, and over 3200 neighbourhood centres under 200 000 square feet in size (Berry, 1963, 193). Twenty of the regional centres had more than 1 000 000 square feet of ground floor area, equivalent to the entire floor space devoted to retailing in Hobart in 1970 (Hobart City Council, 1970, Table 2).

This threefold hierarchy of United States centres distinguished by Berry on the basis of size, is supported by others (Vance, 1962, 491; Simmons, 1964; and Duncan, 1965) in terms of trading area served and level of functions provided. According to Vance, regional centres require a tributary area in excess of 200 000 people and must have Department stores as their core. Community centres may have large variety stores of between 25 000 and 90 000 square feet as their core, provided they sell ready-made clothing and household linens, and require a trade area of at least 100 000 persons. Neighbourhood centres have as their core a supermarket with up to 50 000 square feet and a tributary area as small as 10 000 people due to the need for frequent shopping for food.

By the early 1970's the trend that had become firmly established in the United States a decade earlier had become an important and rapidly spreading feature of the international scene, and was making itself felt in Belgium, France, West Germany, Sweden, Australia, Japan and South Africa (Darlow, 1972, 11). In the United Kingdom, where the process had been slower, some dozen centres were in operation, all fairly small by international standards, and many more were in the planning stage. This was a new breed of shopping development with fully covered malls, doors at all points of public entry to the mall and some form of climate control throughout the public areas. It was, in fact, a controlled shopping environment with a carefully balanced selection of shops, amenities and large car parks. So magnetic was the attraction of these new enclosed shopping centres that there had already developed in the United Kingdom the opinion that they should play a broader and more important role than was originally envisaged. The enclosed centres of the future, it was held, should not only be sophisticated retail market places, but should serve the community in other ways. They have social functions in providing an agreeable and comfortable meeting place for local residents.

The arrival of the shopping centre on the Hobart retailing scene has been so recent that no statistical index of its impact yet exists. To gain an appreciation of the effect that shopping centres are likely to have upon the metropolitan retail structure of Hobart it is necessary to turn to the overall Australian scene. Unfortunately no comprehensive and authoritative survey of Australian shopping centres appears to have been undertaken. Neither the Australian Bureau of Statistics nor the Department of Urban and Regional Development concerns itself with shopping centres as identifiable entities. Consequently it has been necessary to use the Index of Shopping Centres

(1957 - 1971) kept by the National Cash Register Company (1971) in Sydney. Though incomplete and now discontinued, the index provides sufficient data covering the first fifteen years of shopping centre development to allow us to make some interesting generalizations about trends in Australia.

There has been a steady growth in the number of centres in operation (Figure 5.2). The trend towards planned shopping centres became firmly established first in New South Wales, then in South Australia, Victoria and Western Australia (Table 5.8.a). Although Tasmania's first shopping centre was opened in 1965 there was no evidence of a 'trend' until the early 1970's, by which time a clearly defined threefold hierarchy of centres had developed on the mainland with the ratio of regional to community to neighbourhood centres being 1 : 2 : 3 both at the national level and in Sydney where the system had had time to become well established.

GROWTH IN NUMBERS OF SHOPPING CENTRES - AUSTRALIA (1957 - 1971)

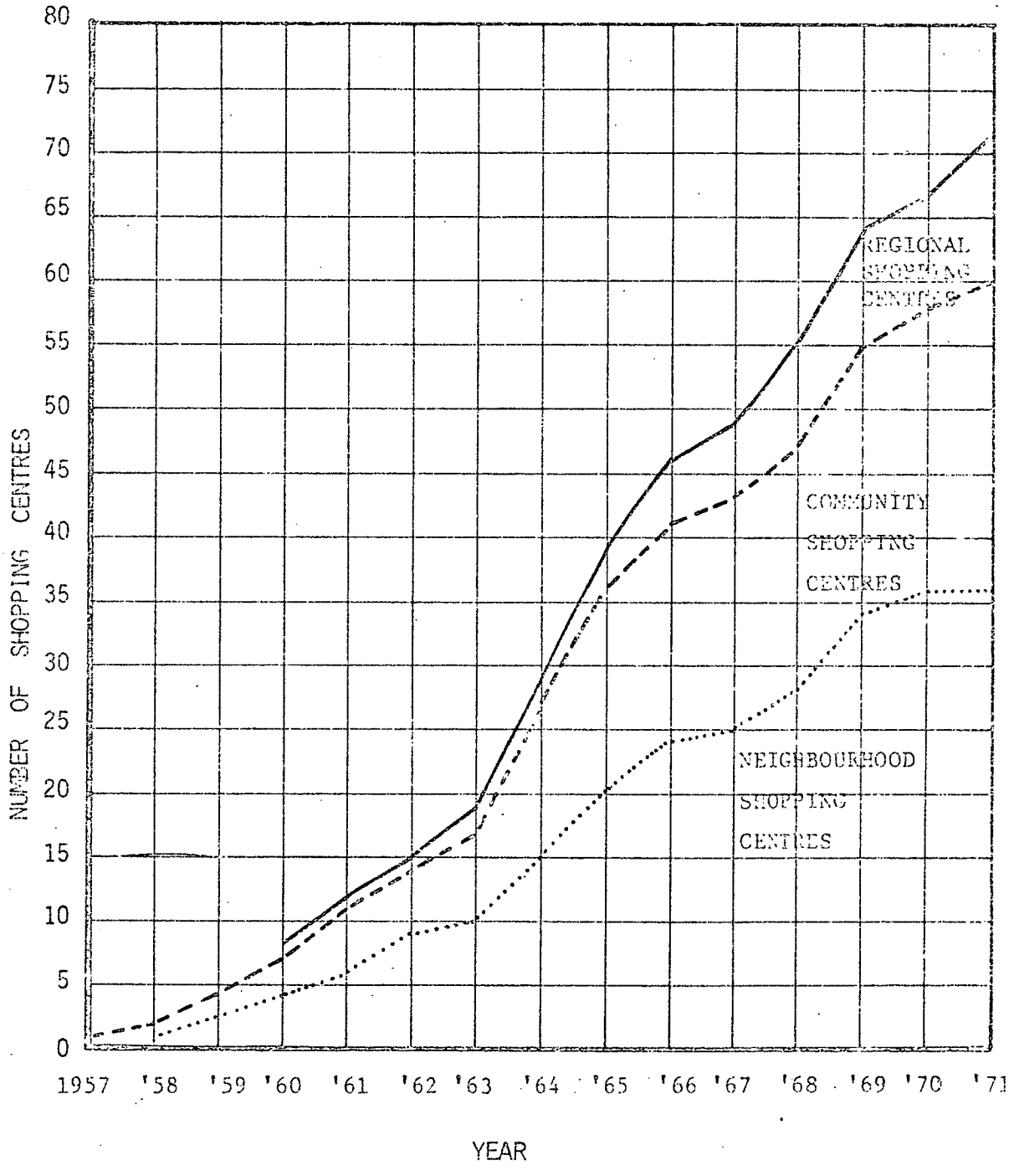


Figure 5.2

TABLE 5.8 a

AUSTRALIAN SHOPPING CENTRES (1957-1971) - GROWTH IN NUMBERS

	N.S.W.				VIC.				S.A.				W.A.				T				Annual Total				Cumulative Total			
Year	R	C	N	Total	R	C	N	Total	R	C	N	Total	R	C	N	Total	R	C	N	Total	R	C	N	Total	R	C	N	Total
1957						1		1														1		1		1		1
1958																												
1959			1	1																			1	1			1	2
1960		2	2	4					1		1	2									1	2	3	6	1	3	4	8
1961		1	2	3									1			1						2	2	4		5	6	12
1962			2	2							1	1											3	3			9	15
1963		2	1	3					1			1									1	2	1	4	2	7	10	19
1964		2	3	5		1	1	2		1	1	2	1			1						5	5	10		12	15	29
1965	1	3	2	6							3	3						1		1	1	4	5	10	3	16	20	39
1966	2		4	6	1			1													3		4	7	6		24	46
1967						1		1					1	1		2						2	1	3		18	25	49
1968			2	2	1		1	2	1			1	1			1					2	1	3	6	8	19	28	55
1969			1	1	1	1		2		1	1	2		4		4					1	2	6	9	9	21	34	64
1970			1	1		1	1	2														1	2	3		22	36	67
1971	3	1		4									1			1					3	2		5	12	24		72
TOTAL	6	11	21	38	3	5	3	11	3	2	7	12	0	5	5	10	0	1	0	1	12	24	36	72	12	24	36	72
No Data				20				4				20				10				0				-				54
Total Constructed				58				15				32				20				1				-				126
Planned				17				11				4				6				0				-				38

Notes

1. The Index contains no data for Queensland, Australian Capital Territory or Northern Territory.
2. No data was given for 54 of the Shopping Centres named in the Index.

Source

National Cash Register Company Index of Shopping Centres (1971).

In contrast to the American authorities, Johnston and Rimmer (1969, 50), in their study of retailing in Melbourne in the mid-1960's identified only a split-level hierarchy, but conceded that supermarkets could be included to form a third category. Centres of the first order, representing a definite decentralization of CBD functions, each had at least one large department store. Those centres in the second order, established specifically to serve newly-developed suburban areas, may or may not have a department store. Supermarkets, representing the third category, were generally constructed as additions to pre--existing retail centres.

At the time Johnston and Rimmer undertook their survey one neighbourhood centre, Arndale at Croydon, was included in the National Cash Register Index. The discrepancy apparently lies in the fact that National Cash Register Company regard the two main tenants as being a supermarket and a hardware store, whereas Johnston and Rimmer (1969, 51) regard the main tenant as being 'a junior department store by American standards'. The National Cash Register Index shows that since Johnston and Rimmer's survey two more neighbourhood centres had been constructed in Melbourne, one in 1968 and the other in 1970. Looked at from a national point of view there now seems little doubt that, without regarding isolated supermarkets as third-order centres, there exists a reasonably well defined threefold hierarchy of shopping centres (see Tables5.8.a and 5.8.b).

TABLE 5.8b

AUSTRALIAN SHOPPING CENTRES (1957-1971) - CHARACTERISTICS

CHARACTERISTIC	TYPE OF CENTRE: Neighbourhood n	Neighbourhood $\bar{x}$	Neighbourhood σ	Community n	Community $\bar{x}$	Community σ	Regional n	Regional $\bar{x}$	Regional σ	ALL SHOPPING CENTRES: Total	ALL SHOPPING CENTRES $\bar{x}$	ALL SHOPPING CENTRES σ
All Shopping Centres												
Number	36			24			12			72		
Cost ($'000,000)		0.48	0.23		1.85	1.09		10.47	5.29	187.27	2.60	4.21
Gross Floor Area ('000 sq.ft.)		33.09	19.91		102.60	48.11		470.83	212.83	9 401.04	130.57	181.49
Percentage of All Centres	50%			33.33%			16.67%			100%		
Developer - Finance & Development	50%			62.50%			66.67%			4.17%		
Local	38.89%			25.00%			-					
Department Store	-			-			25.00%					
Variety Store	-			8.33%			-					
Local or State Govt.	11.11%			4.17%			8.33%					
TOTAL	100.00%			100.00%			100.00%					
Metropolitan Centres												
Percentage of Type		83			79.17			100		84.72		
Distance from City Centre		12.14	7.82		9.03	4.48		11.88	6.90	-	11.10	6.76
Distance from Nearest Shopping Centre		2.54	1.84		2.36	1.94		4.14	5.53	-	2.81	2.85
Trade Area ('000) people)		37.56	32.61		86.48	72.31		269.08	206.26	6 190.89	101.49	135.17
Land Size in Acres		3.72	2.88		7.50	4.82		27.52	21.32	592.85	9.72	13.29
Parking Spaces		188.62	132.81		627.11	411		2 305.0	960.09	43 590	714.59	903.07
Gross Floor Area ('000 sq.ft.)		32.72	17.98		101.04	44.19		470.83	212.83	8 606	141.08	192.57
Parking Spaces per 1,000 sq.ft.		5.76	-		6.21	-		4.90	-		5.07	-
Shops per Centre		18.83	10.90		35.74	18.33		85.00	39.59	2 261	37.07	32.77
Average Size of Store ('000 sq.ft.)		1.74	-		2.83	-		5.54		-	3.81	-
Main Tennants - Type		S			D.S.			2D.V.S.			-	
Main Tennants - Gross Floor Area ('000 sq.ft.)		11.16	5.75		32.79	20.64		172.58	88.46	2 952.3	52.72	76.15
Total Number of Metropolitan Centres		30			19			12		61		

Source:

National Cash Register Company Index of Shopping Centres (1971).

The neighbourhood centre is the smallest and most common type of shopping centre, representing 50 percent of all centres. Such centres generally have a gross floor area of between 15 000 and 50 000 square feet. A supermarket of approximately 11 000 square feet is the main tenant and focus of attraction, with 8 to 28 smaller stores geared to supply more frequently needed goods and services (groceries, fruit and vegetables, hardware, pharmaceutical goods, dry cleaners, beauty salon, snack bar, and sometimes post office, bank, doctor, dentist and other professional services) to between 5000 and 70 000 people living within ten minutes driving distance. Neighbourhood centres require about 4 acres in all for off-street parking in direct ratio to the gross floor space, that is, between 100 and 300 parking spaces. Generally, neighbourhood centres, half of which have been developed by finance and development corporations at a cost of up to half a million dollars each, appear to be able to operate successfully within about 2½ miles of comparable competitors.

The community centre is a larger operation, on average about 100 000 square feet in area and costing between $0.75 million and $3.0 million to construct. It features a department store of about 33 000 square feet in area in addition to the supermarket and between 20 to 50 small stores. Collectively they provide a selection of shopping goods, such as clothing and house furnishings, as well as the more frequently needed convenience goods. On average a community centre serves a trade area of about 86 000 people, and provides over 600 parking spaces on about 7 acres of land. About 20 percent of all Australia's community centres are located in non-metropolitan urban areas. The fact that in metropolitan areas they are situated, on average, about 9 miles from the city centre, that is, somewhat closer than the regional shopping centres, suggests that they nest within the trade

areas of either the regional shopping centres or the inner city area itself and do not compete directly with those centres for higher order functions. It has been claimed that the community centre should not have strong competitors within a radius of three to four miles if they are to succeed (Cundiff and Still, 1971, 313).

The regional centre is the largest of all. Typical of this type is Roselands, situated on a 30 acre site in Wiley Park, ten miles from the heart of Sydney. Approaching one million square feet in floor space (724 000 sq. ft.) and costing $12 million in 1965 (The Sun-Herald, 10.10.1965, 24) this regional shopping centre housed Grace Brothers' department store of 400 000 square feet, a Coles supermarket and more than 95 independent retail shops and kiosks where the customer could shop in air-conditioned comfort. The services and amenities cover those of a complete city - a town hall for meetings and civic functions, banks, a post office, cinema, child-minding centre, chemist, a health studio and doctors, dentists and lawyers. Roselands aimed to provide one-stop shopping for nearly three quarters of a million people who live within 20 minutes drive of it. It was estimated that 60 percent of Roselands' customers would come by car, hence 2952 parking spaces, equivalent to 14 miles of kerbside parking, were provided around the centre. There were 12 such centres in Australia in 1971. Of these 6 were in Sydney, 3 in Melbourne and the remaining 3 were in Adelaide which, with under one million people supported rather smaller centres than Roselands although, more typical of regional centres, each featured two department stores, a variety store and a supermarket.

For one reason or another the pace of development varied from city to city. Location quotients (Table 5.9) show that Sydney and Adelaide developed faster than the national average while Perth and Melbourne were somewhat below. Hobart, in 1971, showed a marked

deficiency by comparison with other state capitals, and the fact that on the mainland in 1971 there was a perfect negative correlation between level of shopping centre development (indicated by L_Q) and ratio of planned centres to developed centres (Table 5.10), suggests that Hobart could look forward to a period of rapid shopping centre development in the 1970's.

TABLE 5.9

COMPARATIVE LEVEL OF SHOPPING CENTRE DEVELOPMENT - AUSTRALIAN CAPITAL CITIES - 1971

City	Population[1] ('000)	%	Shopping Centres[2] Floor Area ('000 sq.ft.)	%	LQ
Sydney	3 168	43.69	4 382	50.79	1.16
Melbourne	2 504	34.53	2 357	27.32	0.79
Adelaide	809	11.16	1 126	13.05	1.17
Perth	640	8.83	676	7.83	0.89
Hobart	130	1.79	87	1.01	0.56
TOTAL	7 251	100	8 628	100	

Notes

The location quotient (Haggett, 1965, 236) provides a city-by-city description of the level of shopping centre development compared with population, using the formula

$$L_Q = \frac{S_i}{P_i}$$

where P_i represents the percentage of urban population in the city and S_i represents the percentage of that city's development of shopping centres as measured by gross floor area in square feet. Quotients above one indicate a regional 'surplus' of shopping centres.

Sources

(1) C.B.C.S., (1972a). 133.

(2) National Cash Register Index of Shopping Centres (1971).

TABLE 5.10

CORRELATION BETWEEN LEVEL OF SHOPPING CENTRE DEVELOPMENT AND RATIO OF PLANNED CENTRES TO DEVELOPED CENTRES IN MAINLAND CAPITALS IN 1971

City	Shopping Developed	Centres Planned	Ratio of Planned to Developed	Rank Ratio of Planned to Developed	Rank L_Q	d	d^2
Sydney	58	17	1:3.41	3	2	1	1
Melbourne	15	11	1:1.36	1	4	3	9
Adelaide	32	4	1:8.25	4	1	3	9
Perth	20	6	1:3.33	2	3	1	1
Σd^2							20

$$r_s = 1 - \frac{6\Sigma d^2}{n(n^2-1)}$$

$$= 1 - \frac{6 \times 20}{4(4^2-1)}$$

$$= -1.00$$

Source

Table 5.8.

Boyce and Clark (1963, 182) point out that, because of the nature of their operation, shopping centre size is not necessarily restricted to the immediate market requirements, but to the market they can capture. Shopping centres not only develop in new territory, but clearly take former customers away from the central shopping districts, especially in smaller cities. The claim that of every $20--million spent in shopping centres, $10-million comes out of "downtown's hide" (Business Week, 5.12.1959, 82) is typical of those made by retailers in CBD locations throughout the United States and Australia. The impact of planned shopping centres upon the retail structure of Australian cities is clearly shown by the regression analysis which follows.

There is a high degree of correlation between the amount of floor space in planned shopping centres in a city and the urban population of that city (Table 5.11). The larger the city the greater the amount of shopping centre space. The form of the relationship is shown by means of the regression line and regression equation in Figure 5.3. Variation in the size of urban population accounts for 94 percent of the variation in the amount of planned shopping centre space in Australian cities*. The regression equation shows that we could expect Hobart, with an urban population of 130 000 in 1971 to have had 99 580 square feet of shopping centre space. In fact it had only 87 000 square feet, that is, 12.63 percent below the expected level.

---

* For formula for coefficient of determination see Appendix A.

TABLE 5.11

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR FLOOR SPACE IN PLANNED SHOPPING CENTRES vs URBAN POPULATION, 1971

City	Population[1] ('000) X	Shopping[2] Centre Floor Space ('000 sq.ft.) Y	X Y	log X	log Y	log X log Y
Sydney	3 168	4 382	13 882 176	3.5008	3.6417	12.7489
Melbourne	2 504	2 357	5 901 928	3.3986	3.3724	11.4614
Adelaide	809	1 126	910 934	2.9079	3.0515	8.8735
Perth	640	676	432 640	2.8062	2.8299	7.9413
Hobart	130	87	11 310	2.1139	1.9395	4.0999
ΣX ...	7 251	8 628	21 138 988	14.7275	14.8350	45.1249
ΣX^2 ...	17 387 221	26 489 794		44.6058	45.7168	
$\bar{X}$ ...	1 450.20	1 725.60		2.9455	2.9670	
σ_X ...	1 310.71	1 703.04				

log b = 1.1651

log a = -0.4648

Regression equation: log Y = -0.4648 + 1.1651 log X

r = 0.97 t = 6.91 α = 0.01 > p > 0.001

r^2 = 0.94

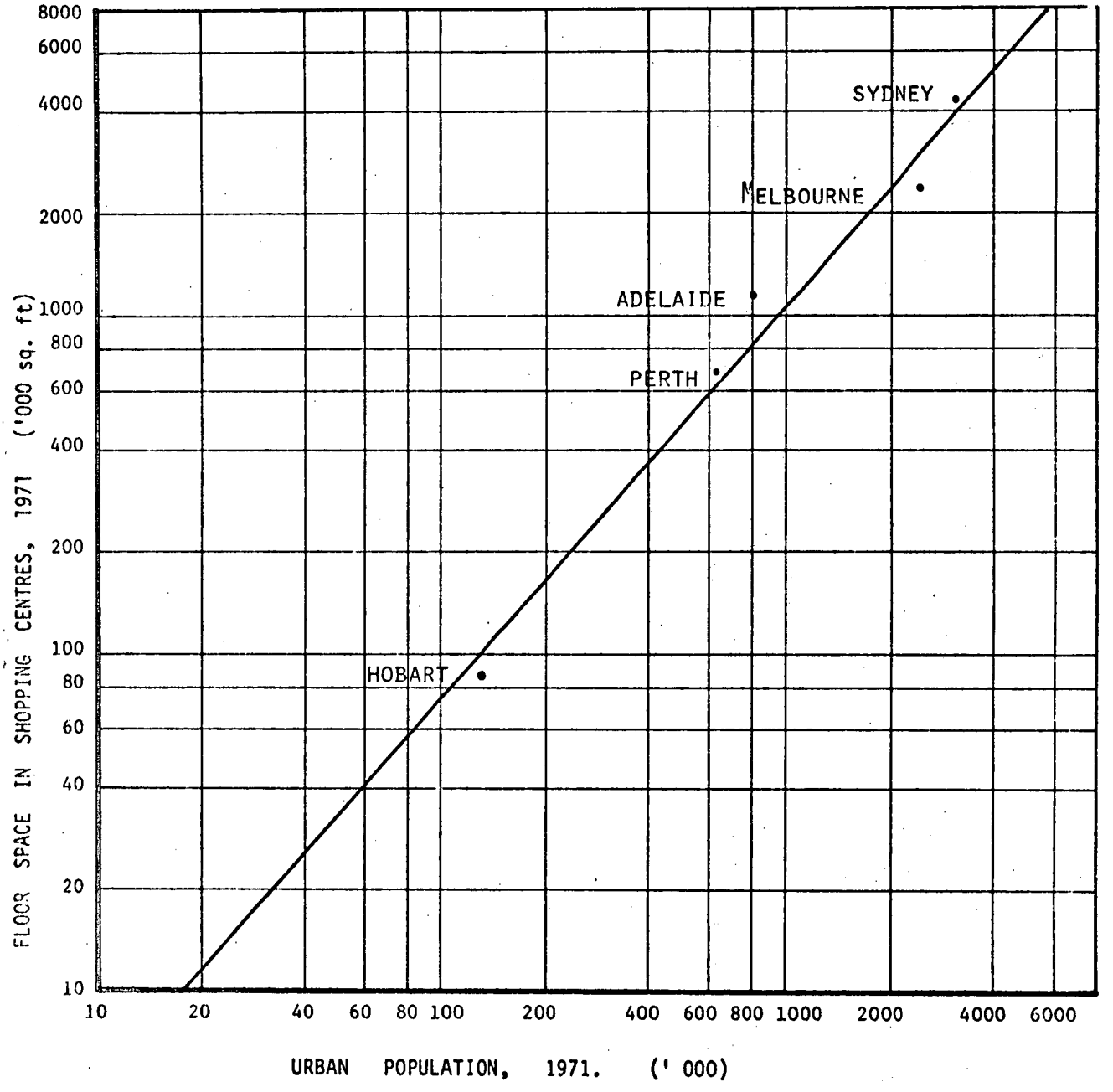
Sy = 414.02

Source

(1) C.B.C.S., (1972a). 133.

(2) Table 5.9.

FLOOR SPACE IN PLANNED SHOPPING CENTRES vs URBAN POPULATION - 1971



$\log Y = -0.4648 + 1.1651 \log X$ $r = 0.97$

Figure 5.3

In an earlier section we saw that decline in numbers of retail establishments inside the CBD was directly related to growth in numbers of establishments in the metropolitan areas outside the CBD (Table 3.33). It is not surprising, therefore, that we find a significant positive correlation between decline in numbers of inner city area retail establishments between 1956-57 and 1968-69, and growth of suburban shopping centres (as measured by gross floor area in square feet) between 1957 and 1969 (Table 5.12). The form of the relationship is shown by means of the regression line and regression equation in Figure 5.4. Variation in amount of shopping centre space 'explains' 95 percent of variation in the number of establishments lost from the inner city area between 1957 and 1969.

TABLE 5.12

COMPUTATION OF CORRELATION COEFFICIENT AND REGRESSION EQUATION FOR DECLINE IN NUMBER OF RETAIL ESTABLISHMENTS IN THE INNER CITY AREA (1956-57 - 1968-69) vs GROSS FLOOR AREA IN SHOPPING CENTRES (1957-1969)

City	Gross Floor Area ('000) in Shopping Centres	Decline in No. of I.C.A. Establish-ments				
	X	Y	X Y	log X	log Y	log X log Y
Sydney	3 111.1	412		3.49	2.61	
Melbourne	2 220.0	372		3.35	2.57	
Brisbane	-	-	-	-	-	
Adelaide	1 097.4	104		3.04	2.02	
Perth	504.2	74		2.70	1.87	
Hobart	87	19		1.94	1.28	
ΣX ...	7 019.7	981	2 260 706.6	14.52	10.35	31.39
ΣX^2 ...	16 073 416.6	324 781		43.71	22.64	
$\bar{X}$ ...	1 403.94	196.2		2.90	2.07	
σ ...	1 246.81	181.87		0.62	0.55	

log b = 0.8638

log a = -0.4350

Regression Equation : log Y = -0.4350 + 0.8638 log X

r = 0.9740 t = 7.44 α = 0.01 > p > 0.001

r^2 = 0.9486

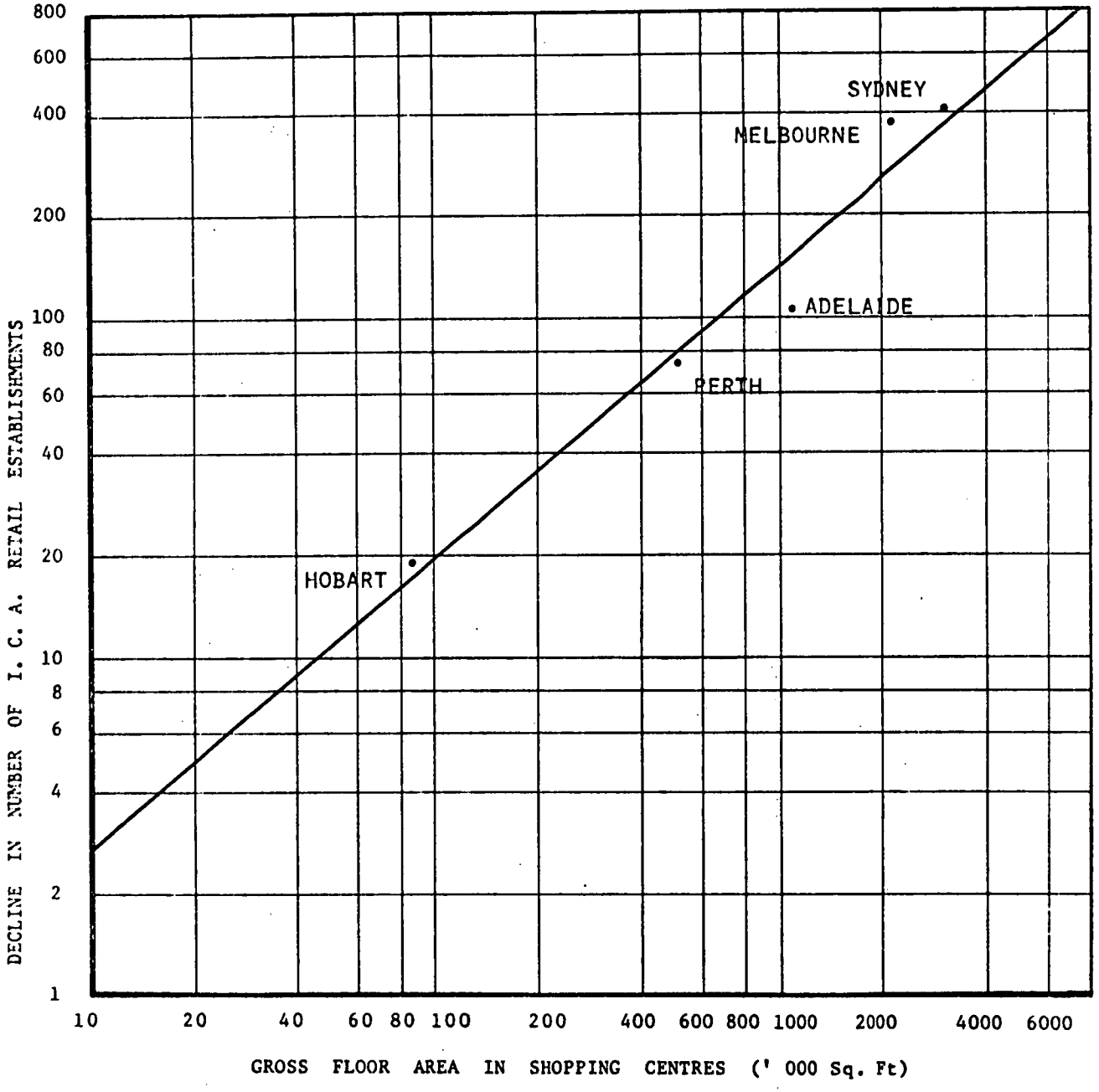
Sy = 41.2328

Sources

(1) Table 3.29.

(2) National Cash Register Index of Shopping Centres (1957-71).

DECLINE IN NUMBER OF RETAIL ESTABLISHMENTS IN THE INNER CITY AREA (1956-57 - 1968-69) vs GROSS FLOOR AREA IN SHOPPING CENTRES (1957-1969).



$\log Y = -0.4350 + 0.8638 \log X$ $\quad r = 0.9740$

Figure 5.4

Hobart's small size, slow growth and relative isolation could account for the late development of shopping centres compared with other Australian state capitals, but the rapid period of development that appeared imminent in the late 1960's came with a rush in the early 1970's. Whereas only two, or possibly three[*], were in existence prior to 1970, by 1974 there were eight centres (Figure 5.5) with a total of 427 600 square feet of floor space (Table 5.13). More than 70 percent of this was constructed in the two years, 1972 and 1973. In contrast to this rapid suburban development Hobart City Council (1968 and 1970) reports retail floor space in the CBD to be static at 1 054 270 square feet, so that gross floor space in shopping centres in 1974 probably exceeded 40 percent of the total retail floor space of the central shopping district. The impact upon the central shopping district of this scale of suburban shopping centre development must be considerable. Furthermore, the largest of the shopping centres pose a real threat to the central shopping district by offering high order goods which were previously to be found exclusively in the CBD. The detailed account which follows outlines the historical development of Hobart's system of planned shopping centres.

---

[*] Magnet Court, Sandy Bay, constructed over a period of nine years from 1961 to 1968, could be regarded as the first tentative step towards shopping centre development in Hobart.

TABLE 5.13

PLANNED SHOPPING CENTRE DEVELOPMENT : HOBART 1961-1974

Opening Date	Centre	Suburb	Developer	Size in Square Feet	Code Establishment	Total Number of Establishments	Car Park Spaces	Population of Trade Area	Level
1961	Magnet Court	Sandy Bay	Hickman & Hollowman (Hobart)	26,000	Supermarket planned but not included	32 planned 24 built	100 planned 45 developed		III
20.11.1965	Rosny Regional (Extended & renamed Eastlands 9.11.1972)	Rosny	Perpetual Insurance & Securities Ltd. (Hobart)	80,000	Supermarket of 14,300 sq.ft.	27	400	26,000	
11.7.1968	Shoreline	Howrah	Gordon Jennings Contractors Ltd. (Hobart) - Australian Land Trusts (Mainland, 1969)- Hooker & Edney Moore (Mainland, 1971)	21,000	Supermarket (4,500 sq.ft.)	4	300	4,500	III
20.8.1970	Channel Court	Kingston	Doedens and Overeem (Hobart)	-30,000	Supermarket (7,000)	13	100-150	?	III
25.4.1972	Wyndham Court	Claremont	Frank Stary (Hobart)	12,600	Supermarket (7,200 sq.ft.)	9	150	7,000	III
16.8.1972	Claremont Village	Claremont	Charles Martin Constructions (Hobart)	65,000	Supermarket (22,000 sq.ft.)	30	400		II
9.11.1972	Eastlands (Extension of Rosny Regional)	Rosny	Signet Insurance Holdings (Mainland)	152,000	Department Store (24,000 sq.ft.) 2 Supermarkets (21,000 & 18,000 sq.ft.)	39	800		I
19.10.1973	Taroona Village	Taroona	Charles Martin Constructions (Hobart)	16,000	Supermarket (6,000)	14	100	3,000	III
31.10.1973	Kmart	New Town	Kresge (51%) & Coles (49%) (U.S. & Mainland)	105,000	Department Store (66,000 sq.ft.) Supermarket (17,000 sq.ft.)	2	640		I

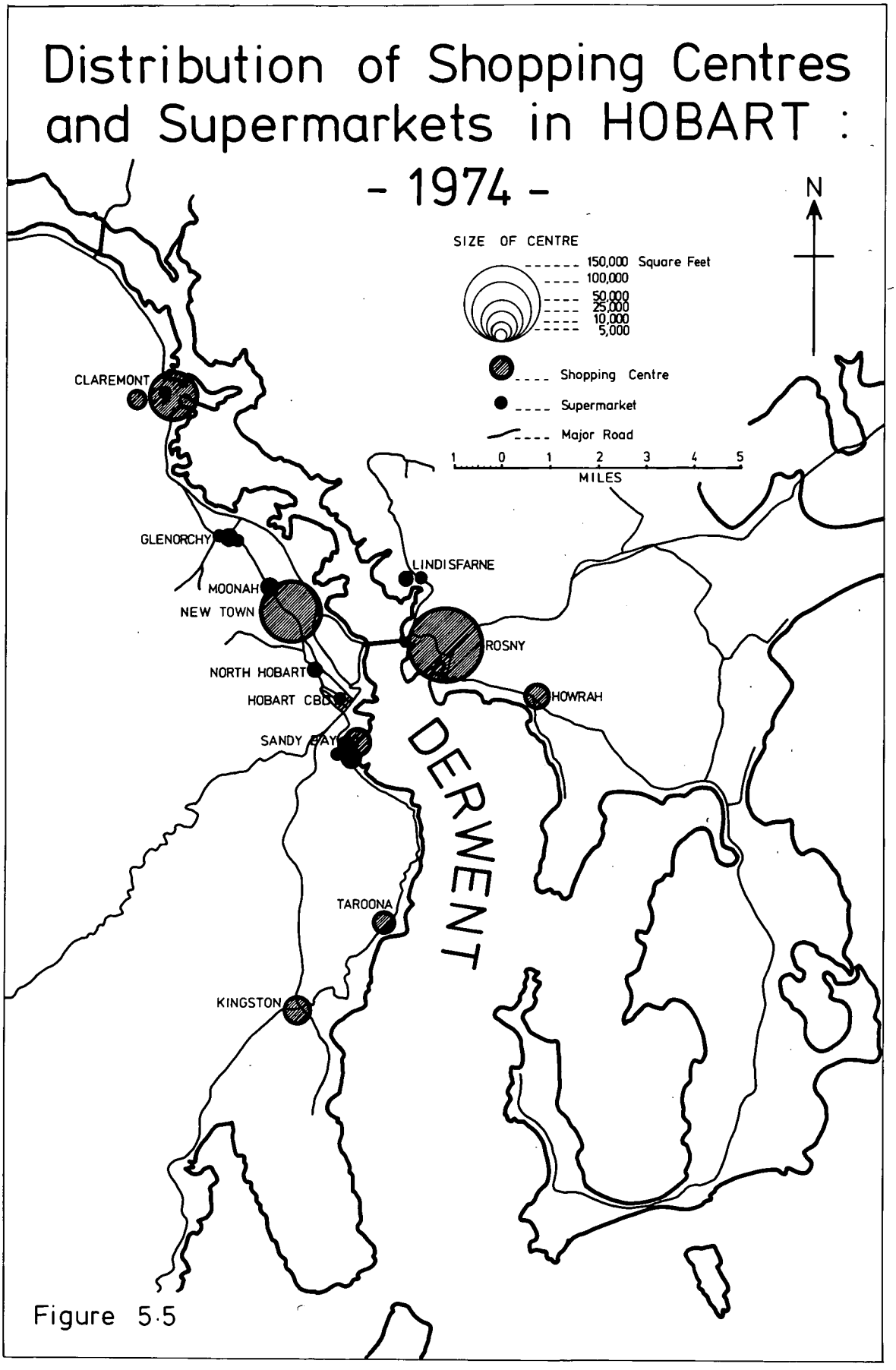

Distribution of Shopping Centres and Supermarkets in HOBART :
- 1974 -
N
SIZE OF CENTRE
150,000 Square Feet
100,000
50,000
25,000
10,000
5,000
Shopping Centre
Supermarket
Major Road
1 0 1 2 3 4 5
MILES
CLAREMONT
GLENORCHY
MOONAH
NEW TOWN
LINDISFARNE
ROSNY
NORTH HOBART
HOBART CBD
HOWRAH
SANDY BAY
DERWENT
TAROONA
KINGSTON

Figure 5.5

Hobart's first planned shopping centre, Magnet Court, started in a small way in 1959 when plans were approved for the construction of 15 new shops and a supermarket from 600 to 10 000 square feet in extent around a car park or courtyard on a triangular shaped block in the midst of Sandy Bay's sprawling shopping area (The Mercury, 12.12.1959, 3 and 4.8.60, 17). The scheme was made possible by co-ordinated effort by Hobart City Council and private enterprise. Demolition of six existing shops and an old home allowed the widening of congested Sandy Bay Road by seventeen feet and added ten feet to King and Princes Streets and, at the same time, gave access to 20 000 square feet of parking court around which the new 26 100 square foot semi-circular complex was designed. Construction was undertaken with a minimum of interference to the existing business houses, all of which transferred to the new centre on the completion of the first stage in 1961.

To the original establishments which included a butchery, greengrocer, chemist, grocer and dry cleaning agency were added two women's fashion shops, a men's wear, children's wear and shoe shop, a manchester store, a gift shop, a jeweller and a cake shop. Services included three restaurants, two beauty salons, a dentist, an optometrist and a self-service laundry. When complete, it was hoped that the $1 million complex of shops, offices and flats would provide a high quality integrated shopping centre which would serve as a focal point for residents of the southern suburbs of Battery Point, Sandy Bay, Dynnyrne, Mount Nelson and Taroona.

Care was taken not to duplicate retail functions in the Court as it was hoped that customers would be attracted to do all their business within a 40 yard radius of their parked cars. A notable omission, however, was the supermarket which had been included in the original

plan. At that stage 11 800 square feet of ground floor space remained undeveloped and could have been used for this purpose, but the fact that there were already two supermarkets within one hundred yards of Magnet Court and that the parking space within the court was severely limited would have deterred prospective supermarket operators from joining the project. In 1968 3500 square feet of this space was used to develop two additional retail units, and the remainder was developed as office space over the next few years.

From the customer's point of view Magnet Court had some major disadvantages. Access by car was difficult when approaching from the south owing to the arrangement of traffic lights and median strip along Sandy Bay Road. The Court's 45 parking spaces not only proved quite inadequate, but obstructed free pedestrian flow between the shops. By modern shopping standards the covered walkway provided quite inadequate protection from the weather but, above all, the absence of a supermarket from the complex meant that Magnet Court could not be regarded as a genuine one-stop shopping centre.

The presence of Magnet Court has, nevertheless, played a significant role in upgrading the Sandy Bay shopping area. By offering higher order functions such as women's fashion shops and jewellers it has greatly increased the area's attractiveness and therefore the size of its trade area. This, in turn, has encouraged further growth in both number of functions and number of establishments in the area, and consequently has, in some measure, led to the capture of trade that would otherwise have been concentrated in the central shopping district.

The example of Magnet Court was not followed immediately in other parts of the city. As recently as 1965, The Mercury (16.1.65, 8) reports, to the north of the city Glenorchy aldermen, businessmen

and bank managers were being advised by a mainland consultant, Mr. W.D. Dent of Sydney, that economic surveys and commonsense must persuade retailers and planners in small towns of the inevitability of change to planned integrated shopping centres. He pointed out that the buying public had become almost completely motorized and that the secret of successful retailing was to provide the twin lures of free parking - to draw customers to the area for regular, planned shopping excursions - and pedestrian malls providing traffic-free peace and safety, closely grouped facilities, and comparative pricing.

Surveys had shown that, although antagonistic when the first Australian planned shopping centres were opened in 1957, the more progressive and far-seeing companies had quickly adjusted to the new trend and its enormous possibilities. The management of some of Australia's best-known city department stores had played an important role in the spread of decentralized shopping projects in all the Mainland States. It was only a matter of time before mainland firms turned their attention to the Tasmanian scene. Mr. Dent advised the Glenorchy City Council to embark upon a comprehensive suburban redevelopment scheme which concentrated upon areas already owned by or available to the Council without putting existing retailers out of business.

Five years later, after debate as to whether or not to move shops back from the main road and make room for more parking in front, a $40 000, five-unit shopping project calling itself Parkside Centre was opened, so marking the completion of the first stage of Glenorchy City Council's development project for an off street car park and shopping area (The Mercury Northside News, 19.2.1970, 19). The new complex, an extension to a 30 year old bookshop known as Dickenson's Arcade, housed a beauty salon, women's clothing salon, wool shop, take-away food bar and a new showroom for office goods, and gave access to

the Council's $100 000 parking area for 200 cars. Future stages of the Council's development programme included expansion of the car park, and construction of more shop entrances opening onto it. This would come about gradually as shop leases expired and properties became available over the years.

Meanwhile in June 1962, to the east of the Derwent, the Hobart based firm Perpetual Insurance and Securities Limited had purchased 15 acres of the Royal Hobart Golf Course, bounded by the Tasman Highway, Blyth Street, and Kangaroo Creek for a major shopping complex, and had appointed Mr. F.J. Zipfinger, an architect who had already designed eight of Australia's leading regional shopping centres, to draw up the plans (Saturday Evening Mercury, 20.10.1962). Rosny Regional Shopping Centre, as the centre was to be called, was planned so that it could be developed and extended as the community grew. Initially, planning was based upon development in five stages to the point where it could serve a population of approximately 75 000 on the Eastern Shore, offering all facilities to the shopper.

Surveys undertaken by Zipfinger (1963) showed that the site was in a key position for this development. They gave a clear indication of the tremendous possibilities for continual steady growth and improving profits. The developers argued that the El Dorado days of the merchandising entrepreneur at the city's centre were over. The centre had developed at a time when freedom of individual movement was not even considered, but there were in 1963 more cars than houses in Hobart and the city centre was incapable of meeting the new challenge. Commenting upon efforts to redevelop the city centre the report adds: "To offset the worst effects, skilled planning and merchandising foresight produced the shopper's oasis of Cat and Fiddle Arcade. Despite the venture's success, the unpalatable fact remains: the city's lay-

out imposes a rigid limit to parking space, thereby depriving this excellent merchandising scheme of its full potential." The developers proposed fast, drastically corrective action away from the central shopping district.

With this as the starting point the developers were influenced in their choice of site by the tremendous east-west traffic flow across the Derwent, shown in the 1961 traffic survey; the limited facilities for full comparison shopping on the Eastern Shore; and the rapid growth of population taking place within the Clarence Municipality. With an assured market of almost 22 percent of Hobart's population in the primary trading area, plus secondary and tertiary areas, and the possibility of doubling the number of customers in the primary area within 10-12 years, Rosny Regional Shopping Centre was considered to be one of the choicest business locations in Australia for many years to come.

Accepting the principles established by earlier developers of drive-in shopping centres, the developers of Rosny Regional Shopping Centre identified primary, secondary and tertiary areas of influence, delimiting each with reference to driving time, geographic factors and comparable shopping facilities in other locations. The accepted standard for driving time was :

Primary Trade Area	8 - 10 minutes travelling time
Secondary Trade Area	10 - 15 minutes travelling time
Tertiary Trade Area	15 - 20 minutes travelling time

This meant that the location of Rosny Regional placed almost the whole of Hobart and Suburbs within the trading area. On the other hand, when geographic barriers and other shopping areas were considered the areas were defined as follows :

Trade Area	Population	Region
Primary	26 550	Clarence Municipality
Secondary	31 790	(a) Richmond Municipality (b) Sorell Municipality (c) Approximately ½ the City of Hobart, within a radius of 3 miles of Rosny Regional
Tertiary	27 000	Remainder of the City of Hobart, outside the 3 mile radius, but within the 4 mile radius of Rosny Regional
TOTAL :	85 340	

The Primary Trade Area was determined by the fact that a shopper from this area was obliged to pass Rosny Regional to enter any other major shopping centre, and the Secondary and Tertiary areas were established on the basis of ½ the accepted driving time, because of competitive facilities, and geographic barriers. Census figures for the Primary Area alone revealed that whereas in 1947 Clarence Municipality had 6.9 percent of the total population of Hobart and Suburbs, in 1962 the proportion had risen to 21.05 percent. It was also noted that the population of the City of Hobart fell slightly, suggesting that the older established part of the city had achieved its full growth, and expansion of any consequence could only take place in Glenorchy, Kingborough and Clarence. Projecting Clarence population potential into the future, and applying no acceleration factor, the survey forecast that, within 20 years, the population of Clarence would be 3 times

as large as it was in 1963. In other words it would be able to support a shopping centre half as large again as the existing City Centre.

A review of the population age structure indicated a young, growing community, in need of all forms of consumer durables over a long period. Considering the number of dwellings and vacant land for further development within 2 miles radius, the report considered the future potential of Rosny Regional as a centre for such items as electrical goods, furniture, furnishings, hardware and garden supplies to be assured. A survey of the car population within the Primary Trade Area indicated that there were more than 7100 motor vehicles within the area. That meant that there were more cars than there were houses, and the car population was growing faster than the number of dwellings. During 1961, a survey of traffic across the Hobart Bridge showed that 6200 movements took place each way every day, that is, there were at least 12 400 people passing within ½ mile of where Rosny Regional was to be situated.

Gross income of the Primary Trade Area was estimated to be $10 million in 1963, rising by 3 percent per annum to $20 million by 1970. During the same period the income of the Secondary and Tertiary areas was expected to rise from $24 million to $29 million. That is, the income of the Primary Trade Area would more than double while that of the Secondary and Tertiary areas would have only limited growth due to little or no population increase. As the result of their surveys the developers believed that Rosny Regional Shopping Centre had the most important single factor a merchant requires - a rapidly growing population, captive to the centre and not catered for by the existing shops in the area - and that they had every reason to proceed with confidence.

The first stage of building, scheduled to begin in August

1963, was to have provided a full range of comparison shopping facilities, comprising approximately 60 000 square feet of trading area with covered walkways, a garden court, public conveniences, paved parking facilities, a child-minding centre and other amenities associated with a regional centre. The second stage was to be an additional 10 000 square feet of trading area, mainly for small shops, but flexible in its use. Stage three would be devoted to the development of a major department store of up to five stories each of which would have an area of 30 000 square feet. Throughout all three stages all stores would share a common ground level. Stages four and five covered the development of a hotel, motel, service station, and a revolving restaurant, and possibly other activities such as a bowling alley and a drive-in theatre.

In January 1963, one hundred leading Hobart businessmen were invited to the Playhouse to inspect the plans and were given the opportunity to join the venture. At that stage Woolworths had already signed a contract for 14 000 square feet (The Mercury, 31.1.1963), but it was almost three years later, on Saturday, 20th November, 1965, that the 80 000 square foot complex was officially opened before a crowd estimated to be between 5000 and 6000 (Saturday Evening Mercury, 20.11.1965). Attracted by first week special offers and slashed prices, Saturday trading in consumer goods, two teams of marching girls, and music by the Hobart City Band, the crowds choked the centre's car park and surrounding streets with their cars.

In spite of the gaiety of the opening, and optimistic predictions of early completion of the second and third stages of the $6 million centre, scrutiny of the six pages of advertisements in The Mercury (17.11.1965) shows that of the 27 shop units 13 were unoccupied on opening day. Woolworths occupied 30 percent of the total space with a

supermarket (14 300 sq. ft.), variety store (8300 sq. ft.) and garden shop (1500 sq. ft.). Other shops included two clothing stores, one shoe shop, a hardware store, two butchers, a wine and spirit merchant and a car display showroom. Services included a coffee lounge, bank and beauty salon.

An essential feature of the development plan was to have been the inclusion, from the first stage, of a full range of comparison shopping facilities to attract shoppers who would otherwise have made their purchases in the central shopping district. Lack of confidence on the part of Hobart businessmen was partly responsible for the venture commencing on a smaller scale than planned. Then, within a month of opening, Rosny Regional shops lost the advantage of Saturday trading as the result of the State government's new Factories, Shops and Offices Act which limited trading hours in Hobart, Glenorchy, Clarence and Kingborough within a six-mile radius of the GPO to 6 a.m. - 6 p.m., Mondays to Thursdays, and 6 a.m. - 9 p.m. Fridays.

The first years of operation were hardly encouraging. In 1966 the developing company suffered a loss of $355 000 after tax (Saturday Evening Mercury, 11.11.1972). By the second year of operation the chairman of Perpetual Insurance and Securities reported that 95 percent of shop space was leased and that profits, although meagre, showed a great improvement on the previous year (The Mercury, 15.8.1967). Much of the difficulty stemmed from the fact that the venture was too small to operate successfully in isolation. What was needed was an injection of capital for rapid development. This came with a takeover of the developing company by a mainland concern.

In 1971 70 percent of the Hobart based Perpetual Insurance and Securities Limited $2 shares were bought up for $1.42 plus a dividend on each share by the Victorian-based Signet Insurance Holdings Limit-

ed (Saturday Evening Mercury, 11.11.1972) which, two years earlier, had bought up a controlling interest in Charles Davis Limited, the owners and developers of the Cat and Fiddle Arcade. Plans for a $3.8 million hotel-department store development were immediately put before Clarence Commission (The Mercury, East Side News, 7.10.1971). While the hotel plans were under consideration by the Public Works Department a contract was let for extensions to the existing supermarket, roofing over the mall, conversion of the lower car park into a department store and construction of a 400 car park in the grounds (The Mercury, 8.2.1972, 2).

At a meeting of the Rosny Merchants Association held on 22nd February, 1972, the Managing Director of Charles Davis Limited, developer of Cat and Fiddle Arcade, and major shareholder of Perpetual Insurance and Securities Limited announced details of a major extension programme involving more than doubling of the existing retail area, by adding 77 000 square feet of floor space, the inclusion of a large discount clothing store, and a change of name for the centre. In future it was to be called Eastlands. Nine months later ten pages of advertisements in the local press proclaimed the opening of Eastlands, 'Tasmania's bright, colourful and comfortable "little city"' (The Mercury, 7.11.1972, 19). Opening the centre Mr. R.D. Mainwaring, Chairman of Clarence Commission, confirmed that Eastlands was the regional shopping centre of the Eastern Shore, and that all other centres would be planned complementary to it (The Mercury, 10.11.1972, 3).

Once again, as with the opening of Rosny Regional seven years earlier, the car parks overflowed, but this time with 152 000 square feet of retail floor space under cover, and a discount department store and two supermarkets to act as magnets, plus 36 smaller stores including two hardware and electrical goods stores, the developers confidently

announced plans for an extra 400 car spaces to enable the centre to cater for 9000 visitors per day (The Mercury, 11.11.1972, 38). Though nothing like the scale of regional shopping centres on the mainland, Eastlands appears to be enjoying considerable success, as is shown by the developer's intention to extend the complex further (The Mercury, 28.2.1974).

The only other planned shopping centre on the Eastern Shore, the Shoreline, of 21 000 square feet was built by a Hobart firm on a $2\frac{3}{4}$ acre site in Howrah in 1968 (The Mercury, 20.10.1969). Like Eastlands, it was located independent of established retail centres. Planned as a neighbourhood community 'core' it offers centralized facilities to the rapidly developing surrounding residential area of about 4500 persons (The Mercury, 11.7.1968), and includes a supermarket of 4500 square feet, a butcher shop, newsagency, two banks, chemist, women's hairdresser, dry cleaner, florist and medical and dental facilities. The specialty shops are situated on either side of a covered mall where shoppers may walk protected from the weather. An off--street park for 300 cars was provided from the outset to cater for the existing population and for likely future development in the area. Like Eastlands, the Shoreline has changed hands and is currently owned by a mainland firm (The Mercury, 20.10.1969, and 7.5.1971).

In the three years from 1970 to 1973 five new planned shopping centres were constructed on the west bank of the Derwent. The first four represented response, on the part of local entrepreneurs, to a perceived need in the rapidly growing peripheral suburbs for better, more attractive shopping facilities. The construction of the fifth, in the inner suburb of New Town, represented a direct challenge to the central shopping district by a free standing discount department store, the K-mart, owned and developed jointly by the mainland variety and

supermarket chain store G.J. Coles, and the United States firm of S.S. Kresge.

The first of these represents a sensitive, if cautious, response to local demand, and had its origin in 1960 when two enterprising Dutch cousins bought 5 acres of market garden on Channel Highway, Kingston, with the intention of building a few shops (The Mercury, Southside News, 20.8.1970). The first, constructed on the highway, included a hardware and electrical shop, a newsagent, and a shoe store. To these were added a fish and chip shop and milkbar. About this stage the opening of the Southern Outlet road gave rise to rapid growth in population in the Kingston area which called for a major facelift to the Kingston shopping area.

In 1970 the developers commenced a programme of planned expansion involving the construction of a string of new premises, of the highway, fringed by concrete walk and lawns, and served by off-street parking for about 100 cars. Known as Channel Court it provided enlarged off-street premises for those establishments on the busy highway and additional retail facilities including chemist, clothing store, jeweller and gift shop, and supermarket of 7000 square feet, and a wide range of services including a restaurant, barber, two banks, doctor's surgery and optometrist (The Mercury, Southside News, 12.2.1970).

Unlike most planned shopping centres, Channel Court has followed a pattern of cautious though continuous growth. New units have been added only when there has been a clear demand, as indicated by a request from a retailer for premises. Rapid growth in the trade area has been reflected in the demand by retailers for more space within the shopping complex and, in the course of adjustment, the hardware store has occupied three locations (The Mercury, Southside News, 29.10.1970). Channel Court's flexible development 'plan', though

ideal from the point of view of a small developer, has not produced the kind of attractive enclosed shopping centre that Hobart customers are beginning to take for granted. It will be interesting to see whether the 30 000 square foot, 13 unit, complex will continue to expand in response to population growth when the proposed 120 000 square foot shopping centre consisting of department store, supermarket, hardware store, furniture store and 30 specialty shops, plus 19 500 square foot motel, 300 seat theatre, service station and medical and child-minding centre is developed by two mainland firms on a 17½ acre site within half a mile of Channel Court in the near future (The Mercury, 27.4.1974).

Next to open was Wyndham Court, a 12 000 square foot venture built by a Hobart architect on a 4 acre site in the midst of the Housing Department suburb of Claremont. This centre, opened in April 1972, was designed to serve a community estimated to be about 7000, and includes as its core a 7200 square foot supermarket situated centrally in a string of 8 specialist units and surrounded by a park for 150 cars. The specialist units include a hardware store, children's and women's gear, hairstylist, chemist, doctor's surgery, and milkbar. The developer's plans are to extend the centre by an extra 5000 square feet when the proposed extension of the Brooker Highway passes in front of the centre (The Mercury, 25.4.1972, 7). When visited in June 1974, however, two of the units were vacant, suggesting that the very much larger Claremont Village Shopping Centre, situated less than half a mile away, could be having an adverse effect on trade.

Claremont Village Shopping Centre opened just four months after Wyndham Court on a four acre site inside the block bounded by Main Road, Box Hill Road, Bilton Street and the railway line, adjacent to the existing unplanned shopping centre. Nineteen properties were purchased by the Hobart developers, Charles Martin Constructions, Pty.

Ltd., and the existing dwellings demolished to allow the construction of 30 shops under cover in a big centrally heated arcade complex covering 65 000 square feet (The Mercury, Northside News, 23.4.1970). It included as its core a supermarket operated by Woolworths covering 22 000 square feet and retailing certain lines of ready-made garments, plus 30 smaller shops surrounding a covered village square and central mall. Customer comfort and ease of internal access is emphasised, and the courtyard fountain, ample seating for shoppers and spacious appearance add to the general atmosphere of luxury.

Care was taken to ensure variety and balance among the specialty shops. Six retail food and include a delicatessen, cake shop, wine and spirit merchant, greengrocer, snack bar and butcher. Five cater for footwear and clothing, including shops retailing children's wear, women's fashions, menswear, and sportswear. Other specialist shops include a chemist, hardware store, gift shop, floor covering specialist, manchester shop, garden shop, pet shop, record shop, camera shop, and American style drugstore. Services include two banks, a laundrette, dry cleaning depot, ladies hairdresser, doctor's surgery, travel agent and public library. Many of the specialist shops are branches of firms established in the central shopping district.

Claremont Village Shopping Centre has been a success from the beginning. 20 000 attended the opening by the Premier of Tasmania, Mr. Reece, on 16th August, 1972 (The Mercury, Northside News, 24.8.1972). The first week's takings equalled ⅓ of the $1 500 000 outlay on the building. 80 000 free raffle tickets for a new car were distributed in the first two days of business, and a month later when the raffle was drawn traffic was banked up for miles leading to Claremont (The Mercury, 30.9.1972). The success of the venture was not universally applauded, however. Traffic police were reported to dread the "gim-

mick nights" arranged to draw Friday night shoppers to Claremont Village (The Mercury, 30.9.1972), and four miles north of Claremont Bridgewater businessmen lamented the fact that residents of the new Housing Department's suburb were not prepared to shop locally.

A year later the developers of Claremont Village Shopping Centre, Charles Martin Constructions, opened a second shopping centre, Taroona Village which, like their earlier project, exhibited the same concern for customer comfort and convenience in an aesthetically pleasing atmosphere. Construction of a shopping centre at Taroona had been under consideration for some years. The unsightly string of shops consisting of a newsagent, women's hair stylist, small supermarket, corner store type greengrocer, butcher, cake shop and chemist which had developed along a bend on Channel Highway had long been considered both a traffic and health hazard. The land had been rezoned for residential use and building regulations prevented expansion or renovation of existing buildings (The Mercury, Southside News, 23.4.1970). Consequently in 1965 Kingborough Council bought seven acres of land in the adjacent block between Taroona Crescent and Nubeena Crescent off Channel Highway, with the view to developing a community centre, sports area and modern shopping centre to replace the existing shops (The Mercury, Southside News, 20.4.1972).

Two acres of this site, with access to Channel Highway, were set aside, and members of the Taroona Shopkeepers' Association were invited to develop a shopping centre with off-street parking facilities. After several years delay the syndicate of shopkeepers which had been formed to buy the land from the Council and develop the shopping centre admitted that they were experiencing financial difficulties (The Mercury, Southside News, 16.3.1972), and the Council decided to negotiate with a developer (The Mercury, Southside News, 20.4.1972). In February

1973 it was reported that Charles Martin Constructions had bought 1¾ acres from Kingborough Council and were to proceed with a $500 000 enclosed complex with 14 shops occupying a total floor space of 16 000 square feet (The Mercury, Southside News, 15.2.1973). Eight months later Taroona Village Shopping Centre was a reality.

All the shopkeepers from Channel Highway, except the newsagent, moved to the new centre leaving behind a row of derelict vacant buildings condemned to demolition (The Mercury, Southside News, 9.5.1974). Their new premises had the advantage not only of attractive surroundings about a centrally heated mall but also considerably more floor space. The supermarket of 6005 square feet is three times the size of the original premises. They were joined by 9 additional units, including a hardware store of 2000 square feet, a garden shop, shops for women's wear and children's wear, a book shop, gift shop, floor covering specialist, a snack bar associated with the cake shop, and a public library.

The only remaining business to operate on the original site was the Taroona Newsagency whose proprietor refused to move on the grounds that the building complied with all regulations, that its location on the corner of Taroona and Channel Highway is superior to that of the planned shopping centre, and that if he were to relocate he would have to pay rent, which he does not pay at present since his shop occupies the front of his residence. If anything, his business has probably benefited from the departure of the other retailers to the extent that his customers now have free access to the eight curbside car spaces of the original centre.

Taroona Village appears to be rather less successful than Claremont Village for a number of reasons, most of which are associated with location and scale of operation. Operating costs are appreciably higher in a modern enclosed shopping mall than in an unplanned string,

so that profit levels can only be maintained if volume of turnover is increased. The fact that a number of former shopkeepers who moved to Taroona Village are reported to have claimed that it was unfair that the newsagent should have been allowed to remain in his old site while they had been forced to move into the new centre (The Mercury, South-side News, 9.5.1974) suggests that some shopkeepers were experiencing difficulty in meeting the higher overheads.

Of those retailers who moved to the new centre all but the hair stylist and greengrocer claimed to have benefited by the move when interviewed after six months occupancy. In order to meet the higher overheads the hair stylist had been forced to employ additional staff and extend the business to include men's hair styling, but the increase in business had been disappointing. The greengrocer admitted that he had been reluctant to move from his original site on the highway as it was admirably situated for a corner store, and the damp, cool conditions in the room beneath the original shop had been ideal for storing vegetables. His new 1341 square foot shop cost him twice as much to rent, his power bill had trebled, the additional space required extra assistance, and the competition from the greatly enlarged supermarket was too keen during normal trading hours. It is not surprising that this business has since changed hands.

Of the eight additional retail units the four smallest, ranging from 228 to 450 square feet, were rented by tenants who had had no previous experience, but appeared to be succeeding by either specializing or combining a number of functions. The women's boutique, for instance, has established a Hobart-wide reputation for tennis wear, and the children's boutique similarly has a reputation for exclusive children's clothes and toys, and draws its clientele from beyond Taroona. Another is rented by a floor-covering contractor who maintains

that he spends on advertising what he saves renting a suburban showroom. One unit has never been occupied.

The first casualties were registered in the first week in July, 1974, less than nine months after opening, when the hardware and garden shops went out of business. The early advertisements claimed that this store would "fulfil all those handyman needs - those kitchen needs - provide a range of aquatic sporting needs that befits a Taroona riverside area" and provide "an interesting range of gift items for weddings, anniversaries, birthdays etc.", but added appropriately, "the demand will increase the variety". The range of goods offered was quite remarkable for the size of the shop but, apparently, was also far in excess of demand. The manager, who had had considerable experience of the hardware trade in Britain, claimed when interviewed, that the feasibility study had indicated that Taroona, with a population of 3000 and an annual growth of 2 percent, would support such a function, but that the anticipated support had not materialized.

It appears that a number of locational and scale factors had been overlooked. The population of Taroona lives in a narrow strip of land ⅓ of a mile wide and 2 miles long between the Derwent and the Channel Highway, the route through Sandy Bay to the city some six miles to the north. Taroona Village is situated close to the southern end of this trade area, and analysis of the field count lists of collectors districts in local government areas in the Hobart statistical division (C.B.C.S., 1973.h.), reveals that over 80 percent of all Taroona residents live on the city side of the shopping centre. Virtually the entire workforce is employed north of Taroona so that orientation is toward the city. For the vast majority of Taroona residents therefore, a visit to Taroona Village Shopping Centre for consumer goods of the kind offered by the hardware store would require more effort than a

visit to either the central shopping district or Sandy Bay shopping area on a homeward journey from work. At the same time the small size of the centre with its limited range of functions would be unlikely to induce the prospective customer to try there for higher order goods. It is therefore not surprising that by the end of 1974 the gift shop, which offered a wide range of goods including watches, manchester, pottery, handbags, specialty cards and wrappings, and also acted as a dry-cleaning agent, had gone out of business as had the bookshop.

While the success of individual shopping centres is by no means guaranteed, their ability to draw custom away from the CBD and unplanned suburban shopping districts alike is unquestioned. Although no statistical evidence of the impact upon Hobart's CBD yet exists, there can be no doubt that the advent of the planned shopping centre has led to an acceleration of the process of retail decentralization, and has caused the CBD to concentrate upon high-order specialty goods for which it is best suited.

V.6. The Impact of the Freestanding Discount Department Store upon the Trade of the CBD

In October 1973 a new type of retailing centre, the K mart appeared in Hobart. In size and importance it rivals the regional shopping centre at Eastlands and like regional shopping centres it poses a threat to the CBD.

Free standing discount department stores, of which the K mart is an example, are comparatively new in Australia although in the United States, where they have their origin, they already form part of the established commercial scene. The first K mart was opened in Australia in 1969 since when 17 have been built by K mart (Australia) Limited, which is 51 percent owned by S.S. Kresge Company of Michigan, U.S.A.

and 49 percent owned by G.J. Coles and Co. Ltd. In the words of the public relations and promotions brochure "A K mart is a large free standing discount department store with approximately 100 000 sq. ft. (2½ acres) of floor space on one level. Its range of merchandise is similar to that of the normal department store with more than 50 departments including men's, women's and children's clothing and shoes, hardware, sporting goods, electrical appliances, furniture and furnishings, chemist, etc., etc. It also contains a large supermarket and the whole area is under self-service checkout. The main feature of a K mart is that merchandise is sold at discount prices. Each unit requires a staff of approximately 100 and parking is provided for a minimum of 500 cars" (Coles, 1974).

Compared with the department store in the central shopping district the K mart has considerable advantages. From the consumer's point of view it offers the convenience of cheap, one-stop shopping in a climatically controlled environment with the greatest possible internal accessibility, in a location with high accessibility from the region and ample parking space. Compared with the central shopping district it has little to offer the shopper who has atypical tastes or needs, or who is looking for exclusive, high quality goods. Nor does it pretend to satisfy the lunch hour shopper. Nevertheless it provides an attractive market which can justifiably claim to satisfy the demands of a very wide sector of the city's shoppers.

From the entrepreneur's point of view the K mart has considerable advantages over the department store in the central shopping district. While the K mart probably has as many departments as its city counterpart its policy of catering exclusively for the needs of the 'average' shopper allows mass production, mass buying, mass handling and mass selling in an assured market. Concentration on a limited

number of lines, all quick-moving and sometimes made by a subsidiary of the chain, coupled with the standardization of everything from paperwork procedures to the layout and external appearance has made this form of retailing highly profitable. All goods are sold on a cash and carry basis, although layby facilities are available on goods over $50. In return goods are sold at discount prices. Labour costs are reduced to a minimum as the result of self-service, and pilfering, a drain on the profits of modern department stores where all goods are openly displayed, is reduced to a minimum by means of strict security measures.

A number of significant advantages accrue to the K mart as the result of its policy to be free standing. Unlike the department store in the central shopping district, surrounded by variety stores and specialty shops, the free standing K mart has no competition from shops in the immediate neighbourhood, so that K mart shoppers are likely to make purchases over a wider range of goods on any given visit than they would have made in a department store in the central shopping district. Since the K mart is not competing for a prime CBD location, savings in rent can be used to acquire an extensive site with the marked advantages of one level shop layout, wholesaling and storage facilities on the same site and, most important, free parking facilities for patrons.

The traditional view of department stores is that they form the nuclei of central shopping districts yet, when one comes to consider the factors that led to this position initially and the developments that have taken place subsequently, free standing department stores such as the K mart appear to be a logical development in retailing. Both their form and location result from the range of forces weakening the position of both the central shopping district and the

department store within the central shopping district. Nelson (1958, 88) points out that the big department store came into being in the United States in the 1930's when the central shopping district was the most accessible place in the community for the greatest number of residents, but that its huge generative power led to such congestion and high land rents that few major new stores have been built in the prime retail area of major United States cities since 1929.

As long as public transport was the dominant form the big department store was confined to the central shopping district, but with the advent of the private motor vehicle this restraint was removed and both in the United States and in Australia department stores have migrated to the suburbs where they generally form the heart of the largest shopping centres (Parker, 1968, 55; Johnston & Rimmer, 1969, 52). On the other hand, the situation in the United Kingdom appears to be static. Fulop (1968, 10) accounts for this in terms of trends in packaging, advertising and branding which have had the effect of nullifying the advantages once offered by the distinctive lines of department stores. Parker (1968, 63) questions whether department stores are ever likely to grow up in new centres in the United Kingdom. The stores themselves show no great anxiety to migrate from the city centre and so far the local government authorities have shown no willingness to let them do so. Moreover, pedestrian shopping precincts in the new centres, with their easy access between shops and walks protected against inclement weather, are in fact a form of department store. Unlike the newest American and Australian suburban shopping centres the United Kingdom shopping precincts have not been planned for motorized shopping.

Provided that the community it serves is highly motorized and provided the centre is large enough to be viable on its own there is no

reason why the department store should not be free standing. Nelson (1958, 46) estimates that 45 percent of the department store's business is self generated, that 30 percent is generated by compatible neighbours and a further 25 percent of business results from impulse buying by people employed in the city centre. In other words he attributes 55 percent of a department store's business to its specific location in relation to compatible retail facilities nearby and to people working downtown, and he claims that if a department store were to move from its downtown location and it were to maintain its volume of business it would have to increase its advertising budget substantially. In recognition of this the K mart's advertising includes five full pages in The Mercury newspaper each week and periodic distribution of 46 000 illustrated catalogues to each householder from New Norfolk in the north to Kingston in the south, and from Sorell in the east to Ferntree in the west.

It is true, of course, that the K mart cannot take advantage of impulse buying by lunch hour office workers, and that it cannot benefit from the business generated by compatible neighbours, but at the same time this may be compensated for by the wider range of goods its patrons are likely to purchase at the K mart because there are no other shops nearby. It should also be remembered that the K mart is not simply a department store. The combination of discount store and supermarket make it more like a regional shopping centre than a department store and it is therefore likely to exert a somewhat different, more persistent attraction than does the department store in the city centre.

The K mart enjoys considerable locational advantage over the CBD. Not only does its suburban location allow ample free parking space for customers, but its site 2½ miles north of the CBD is close

to the geographical centre of the city. Field count lists (C.B.C.S., 1973.h) show that in 1971 29.74 percent (45 569) of the metropolitan area's population lay to the north, 27.89 percent (42 736) lay across the Tasman Bridge to the east, and 42.37 percent (64 911) lay to the south of the K mart. If all consumers from the north, half the consumers from the east, and half the consumers from the region lying between the K mart and the CBD (22.22% of the metropolitan area population) are regarded as lying within the K mart's sphere of influence, it would amount to 54.80 percent of the metropolitan area's population compared with the CBD's 45.2 percent.

In reality, no clearly defined trade area boundaries can be drawn between the K mart and the CBD, but a survey carried out in 1974 (Cutforth, 1974) showed that while there was the normal decline in patronage with distance from the K mart, consumers visited the K mart from all parts of the metropolitan area, including those suburbs south of the CBD. It is significant that 87 percent of all respondents travelled to the K mart by car and that most gave 'convenience of shopping' as the most important reason for patronizing the K mart. Other reasons, in order of important, were 'cheapness of goods', 'closeness to home', 'range of goods', and of almost equal importance 'advertising' and 'specials'.

V.6. Conclusion

Recent trends in the supply side of the system serve to illustrate how entrepreneurs have adopted more efficient merchandizing techniques, increased scale of operation, varied the nature of their establishments, and changed their location in pursuit of their goal of profit maximization. In the process they have accelerated the process of dispersal of retailing from the CBD and consequently have contributed to long term changes in the retail structure of the city. Most recent developments have taken the form of large-scale ventures sponsored

chiefly by mainland or foreign investment and development companies. There is no doubt that without their influence decentralization of retailing would have assumed a slower pace.

By far the most significant change to have taken place in the supply side of the system in the past decade has been the trend towards planned shopping centres. Designed to serve trade areas of varying size, these naturally vary in size and mix of establishment types. It is interesting, however, that by 1974 a three-fold hierarchy of suburban planned shopping centres had evolved which conformed to the middle three ranks of the hierarchy of unplanned centres that was evident prior to the advent of the shopping centre. First-order centres, represented by Eastlands and the K mart, with floor space in excess of 100 000 square feet, represented decentralization of higher order functions from the central shopping district, and serve populations of 50 000 persons or more. Second-order centres, represented by Claremont Village alone, having between 50 000 and 100 000 square feet, serve a community of several suburbs. Third-order centres, such as The Shoreline, Channel Court, Wyndham Court, and Taroona Village, of under 50 000 square feet serve suburban neighbourhoods of about 3000 to 5000 persons.

By 1974 Hobart's shopping centres amounted to about 40 percent of the retail floor space of the CBD, and the effect of the largest centres was being felt throughout the full range of commodities and establishment types. It seems reasonable to assume, therefore, that, failing some unforeseen reversal in the trends described, the importance of the CBD is likely to continue to decline rapidly through the 1970's.

CHAPTER VI

CONCLUSION

No one would deny that Hobart has a character of its own resulting from its unique site, the particular period in which its development has taken place, and the socio-economic and other cultural attributes of its people. This study, however, serves to illustrate the fact that the fundamental structure of the city conforms remarkably with the spatial organization of other cities of the western world where similar forces are at work. Not only does a similar central place system exist in Hobart, Melbourne or Chicago, but the development of all western cities appears to adhere to the principle of equifinality, so that, with minor variations, which can be accounted for, their individual systems exhibit similar structural characteristics.

The role of the CBD in the metropolitan retail structure of Hobart is constantly changing and, in common with the central business districts of cities throughout the western world, its importance, measured in terms of retail sales, is declining relative to population growth and over time. This decline is attributable to the fact that the CBD is an integral part of an intra-urban commercial system, the function of which is to supply demand for goods in the most efficient manner possible. The demands of the entire area can only be supplied efficiently from a central location when the town is small, but with population growth increasing numbers of consumers live further from the CBD, and these are prepared to travel to the CBD only infrequently to purchase goods whose thresholds cannot be met in a peripheral location. Since the consumers' aim to satisfy their demands for goods with the minimum of effort is matched by the suppliers' aim to seek out and supply demand with the aim of profit maximization, the process

of retail decentralization may be regarded as a natural consequence of city growth.

With relatively constant demand balanced approximately by supply the retail system settles into a spatially organized equilibrium which takes the form of a central place hierarchy that carries out the work of the system as efficiently as possible. In Hobart, as in most other cities of the western world, a five-fold hierarchy of centres is identifiable. The size of centre at each level is related to the overall size of the city, so that what passes for a regional centre in Hobart may be regarded as a community or neighbourhood centre in a larger city. An exponential relationship exists between number of centres at one level in the hierarchy and number of centres at other levels. Hobart, in 1969, exhibited a $k = 3$ relationship, there being one CBD, three regional centres, and so on. Local disturbing factors cause minor imbalances between demand and supply and have a randomizing effect upon distribution so that the equilibrium or steady state of the system is reflected in rank-size regularity. In 1969 Hobart's centres showed general conformity to this distribution, but the progressive departure from the rank-size rule suggests that the needs of sectors served by the smaller centres were being inadequately supplied and that the CBD was playing an over-dominant role in the metropolitan retail system.

Adjustments are constantly being made within the city as the system (the retail structure) strives to balance changes taking place in the environment (the demand for goods). The point of balance is always shifting as interaction takes place between the environment and the system, and between components within both system and environment (changing level of technology, affecting transport, communications etc.; changing relations between numbers of types of establishments, and be-

tween numbers, size and trade areas of establishments; and changing numbers, size and space demands of retail centres), so that the best that can be achieved is a moving equilibrium.

In the past twenty years changes in the environment, particularly demographic changes such as growth and redistribution of population, rising living standards, changing consumer tastes and increasing mobility, have disturbed the balance of the system. In common with other western cities where similar changes have occurred, Hobart has witnessed a decline in the importance of the CBD as retail functions have progressively dispersed from the central shopping district. First to go were the convenience goods representing the day-to-day needs of the consumer. With city growth, increasing use of the private car, increasing CBD congestion, and changes in retail technology, the dispersal process continued so that the list of retail functions now to be found only in the CBD has become comparatively limited.

By the early 1960's Hobart's CBD ceased to dominate the overall retail sales of the metropolitan area, but by comparison with other Australian capitals it appeared to be holding its own. This appears to have been the result of several factors including, for instance, geographic inertia which made local entrepreneurs reluctant to risk investing in suburban centres, the existence of a highly centralized public transport system, the construction of a freeway system focussed upon the CBD, and the redevelopment of Cat and Fiddle Arcade in the main CBD shopping block giving it all the advantages of a one-stop shopping centre.

By the late 1960's, after a period of comparatively slow suburban development and worsening inner city congestion, Hobart's retail system was ready for major adjustment. Only minor adjustments had taken place through the 1960's, mostly in the form of supermarket con-

struction in existing unplanned suburban districts. Their impact appears to have been as great upon the lowest level in the hierarchy, the corner store, as upon the CBD from which convenience goods had already largely dispersed. But as newer and larger supermarkets were constructed, offering mass produced durable goods, their effect was increasingly felt in the CBD.

More recently Hobart has seen the development of planned shopping centres incorporating not only the functions normally provided by supermarkets but also many of the higher order functions characteristic of department stores and specialty shops in the CBD. Designed to serve the needs of trade areas of different sizes, the suburban shopping centres fall into the three intermediate ranks of the existing central place hierarchy (regional, community and neighbourhood). The smallest of these have been constructed in the growing outer suburbs where they hope to be able to grow as demand increases. The largest, requiring much greater support than can be found in a peripheral location, have selected the more densely populated established suburbs where they are able to intercept suburban consumers on their way to the CBD. All have the overwhelming advantage of convenient one-stop shopping for groceries and household goods, and the largest offer the whole range of goods found in inner city department stores plus a carefully balanced selection of specialty shops.

Judging by trends both in Hobart and on the mainland of Australia over the past decade it seems certain that the process of retail decentralization will continue in Hobart through the 1970's and 1980's. Imbalances in the system, identified in 1969, were only partly remedied by shopping centre construction in the early 1970's, and sectors of the city, especially those on the Eastern Shore, were still clearly under-served by suburban centres in 1974. Furthermore, Hobart's population

seems likely to continue to grow at a moderate rate, and there is every indication that real income and personal mobility will continue to increase.

It seems likely that by the mid-1970's the CBD will retain no more than about 30 percent of Hobart metropolitan area's retail sales. The absolute number of retail establishments in the CBD will probably have fallen, and those remaining are likely to specialize in commodities that require the support of the entire metropolitan area, such as fashion and specialty goods. The city's largest establishments, including department stores, which serve the entire metropolitan area are likely to be strongly represented in the CBD. Conversely, establishments that provide low order goods such as grocers and supermarkets are likely to be represented in insignificant proportions.

In the more distant future the rate of decline is likely to decrease as the steady state of the system is approached. Theoretically, with even population distribution, and equal ease of movement in all directions within the city, the steady state of the system should follow the rank-size rule. The CBD would then be roughly twice the size of the largest suburban centre (instead of four to five times the size as in 1969), three times the size of the next largest centre, and so forth. The actual amount of retail sales and the percentage of the metropolitan area's sales made in the CBD will depend very largely upon the size of the metropolitan area's total population, but also upon a variety of other factors which, over time, may either operate to reduce the importance of the CBD or tend to retard the process of decentralization. These factors include, for instance, level and focus of freeway development, quantity of inner city parking, quality and focus of public transport, level of car ownership, level of planned shopping centre development, inner city redevelopment, size of the inner city workforce, and government policy.

APPENDIX A

LIST OF MATHEMATICAL SYMBOLS AND FORMULAE USED

a = the regression parameter which describes the intercept of the regression line with the Y axis. See regression equation. The formula for computing a is

$$a = \overline{Y} - by_x \overline{X}$$

where $\overline{Y}$ = the mean of the Y scale by_x = the regression coefficient (see 'b' for computation) $\overline{X}$ = the mean of the X scale.

b = the regression coefficient in regression analysis which describes the rate of change in the dependant variable (Y) for a unit change in the independent variable (X). See regression equation. The formula for computing the coefficient b is

$$by_x = \frac{\Sigma XY - \frac{\Sigma X \Sigma Y}{N}}{\Sigma X^2 - \frac{(\Sigma X)}{N}^2}$$

where by_x = rate of change in Y for a unit change in X,

X = raw scores from which we are predicting,

Y = raw score scale to which predictions will be made,

N = number of pairs of scores observed.

"Breaking-point" refers to the line of indifference or separation between two retail centres and is calculated by means of the formula

$$S = \frac{D}{\sqrt{\frac{A}{B}} + 1}$$

where S = the point separation distance, from centre B, along a line drawn from centre A to centre B (i.e., the break point),

A = the larger of the two centres,

B = the smaller of the two centres, and

D = the separation distance of the two centres A and B.

Chi-squared (χ^2)

$$\chi^2 = \Sigma \frac{(O - E)^2}{E}$$

where O = observed frequencies

E = expected frequencies

Coefficient of determination (r^2)

$$r^2 = 1 - \frac{S^2_y}{\sigma^2_y} \times 100$$

where r^2 = the coefficient of determination, or the portion of variance in the dependent variable Y which is associated with or "explained" by, the variation in the independent variable X,

S^2_y = the error variance, and

σ^2_y = variance of the Y distribution.

Coefficient of Specialization is used to measure the degree of specialization of Australian central business districts, and is determined by computing a location quotient for each retail commodity group by dividing the percentage of CBD sales in the group by the percentage for the Metropolitan Area in the same group. These location quotients are then squared, summed, and divided by the number of commodity groups. The larger the result, the greater the degree of specialization.

Formula:

$$\frac{\Sigma \left(\frac{\frac{X_c}{X_t} \times 100}{\frac{Y_c}{Y_t} \times 100} \right)^2}{N}$$

where X_c = sales of commodity 'c' recorded in area X, i.e. the CBD,

X_t = total sales of all commodities in area X, i.e. the CBD,

Y_c = sales of commodity 'c' recorded in region Y, i.e. the metropolitan area,

Y_t = total sales of all commodities in region Y, i.e. the metropolitan area, and

N = number of commodity groups.

Coefficient of determination (r^2)

$$r^2 = 1 - \frac{S^2_y}{\sigma^2_y} \times 100$$

where r^2 = the coefficient of determination, or the portion of variance in the dependent variable Y which is associated with or "explained" by, the variation in the independent variable X,

S^2_y = the error variance, and

σ^2_y = variance of the Y distribution.

Coefficient of Specialization is used to measure the degree of specialization of Australian central business districts, and is determined by computing a location quotient for each retail commodity group by dividing the percentage of CBD sales in the group by the percentage for the Metropolitan Area in the same group. These location quotients are then squared, summed, and divided by the number of commodity groups. The larger the result, the greater the degree of specialization.

Formula:

$$\frac{\Sigma \left(\frac{\frac{X_c}{X_t} \times 100}{\frac{Y_c}{Y_t} \times 100} \right)^2}{N}$$

where X_c = sales of commodity 'c' recorded in area X, i.e. the CBD,

X_t = total sales of all commodities in area X, i.e. the CBD,

Y_c = sales of commodity 'c' recorded in region Y, i.e. the metropolitan area,

Y_t = total sales of all commodities in region Y, i.e. the metropolitan area, and

N = number of commodity groups.

Constant Dollars ($ constant)

The calculation of constant dollars involves the conversion of later monetary values to earlier values by the formula

$$C = \frac{V \times 100}{I + 100}$$

where C represents the earlier or constant value, V represents the later value, and I represents the percentage increase in the retail price index (or consumer price index) from the earlier to the later period.

Consumer price index is essentially an estimated pattern of consumption for the six Australian State capital cities combined, and is designed to indicate the percentage weighting of components in a wide range of consumer goods such as food, clothing and drapery, housing, household supplies and equipment, and a variety of goods and services. Increase in the weight of a commodity from one period to another is compensated for by relative decrease in weight of other commodities, so that changes in weight, shown in percentages, indicate relative variation in price and/or consumption of listed commodities.

Correlation coefficient - see Pearson product-moment correlation, coefficient (r) and Spearman's rank correlation coefficient (rho).

Correlation significance (α)

The students 't' test is used to test for significance (α) when comparing two data sets to be certain that any differences or similarities between the two sets could not have been by chance. (See Table III 'Distribution of t' in Chase (1967, 232)). Levels of probability used throughout this study are 0.001 = highly significant, 0.01 = significant, and 0.05 = probably significant.

Error of variance (S^2y).

See coefficient of determination.

Location quotient (L_Q) is used to compare one population characteristic with the total population in terms of regional distribution. For instance, if the inner city area has 26.89% of the retail establishments but only 0.87% of the total population of the metropolitan area, then obviously retailing is concentrated in the inner city area. This concentration is expressed as a single statistic $\frac{26.89}{0.87} = 30.91$. Location quotients below 1 express deficiency in a characteristic, while those above show a surplus.

Formula:

$$L_Q = \frac{\frac{X_c}{Y_c} \times 100}{\frac{X_p}{Y_p} \times 100}$$

where X_c = The amount of characteristic 'c' recorded in area X,

Y_c = the amount of characteristic 'c' recorded in the entire region Y,

X_p = the population of area x, and

Y_p = the population of the entire region Y.

L_Q - See location quotient.

Mean $(\bar{x}) = \frac{\Sigma X}{N}$

where X = raw score of a given commodity,

N = number of commodities for which we have scores.

N = number of commodities etc.

Pearson product-moment correlation coefficient (r) :

$$r = \frac{N\Sigma XY - \Sigma X \Sigma Y}{\sqrt{N\Sigma X^2 - (\Sigma X)^2}\ \sqrt{N\Sigma Y^2 - (\Sigma Y)^2}}$$

r = correlation coefficient (see Pearson product-moment correlation)

r^2 = see coefficient of determination.

Regression Equation ($Y = a + bX$)

where Y = the dependent variable,

a = the intercept of the regression line with the Y axis,

b = the rate of change in Y for a unit change in X,

X = the independent variable.

See also 'a' and 'b'.

rho - see Spearman's rank correlation coefficient.

Sigma (Σ) = the sum of the quantities.

Significance (α) - see correlation significance.

Spearman's Rank Correlation Coefficient (rho):

$$\text{rho} = 1 - \frac{6 \times \Sigma d^2}{n\,(n^2-1)}$$

where d = difference between the two ranks for a given individual,

n = number of individuals ranked.

Square root ($\sqrt{\ }$)

Squared (X^2)

Standard deviation (σ)

$$= \sqrt{\frac{\Sigma(X-\bar{X})^2}{N}}$$

Unless otherwise stated calculation of standard deviation was performed on an HP-45 Hewlett Packard calculator using the formula:

$$\sqrt{\frac{1}{N-1}\left[\Sigma(X^2) - \frac{(\Sigma X)^2}{N}\right]}$$

Standard error (S_y) tells us how far our predictions derived from a regression equation are likely to be in error and for what proportion of the individuals. The formula, when the regression is Y on X is

$$S_y = \sigma y \sqrt{(1 - r^2)}$$

where S_y = standard error of estimate of y,
σ_y = standard deviation of the Y scores,
r = correlation between X and Y.

Student's t-test (t) is used to test for signifance (α) when comparing two data sets to be certain that any differences or similarities between the two sets could not have been by chance. The formula for calculating 't' for a correlation coefficient (r) involves the use of 'r' and the 'degrees of freedom' as follows:

$$t = \frac{r \sqrt{(n - 2)}}{\sqrt{(1 - r^2)}}$$

where n-2 = degrees of freedom,
r = correlation coefficient.

S_y (see standard error)

S^2y = the error variance. (See coefficient of determination.)

t - see student's t-test.

Variable (X) or (Y)

Variance of the Y distribution (σ^2y). (See coefficient of determination.)

X = the independent variable. See regression equation.
= also the raw score of a given commodity.

$\bar{x}$ = mean

$\bar{X}$ = the mean of the scale. See regression equation.

X^2 = squared

Y = the dependent variable. See regression equation.

$\bar{Y}$ = the mean of the Y scale.

A P P E N D I X B

THEORIES OF CONSUMER BEHAVIOUR

B.a. Concepts of 'demand', 'need' and 'social conformity'

Economic theorists were the first to advance formal explanations of consumer behaviour. Economic theory treats the retail 'environment' as though it were made up of a homogeneous mass of consumers who have perfect knowledge about the market and who act as rational beings to obtain optimum value for money and effort. Price is the strongest motivation, according to economic theorists, so that man's behaviour is predictable. This approach has led to the development of deterministic models such as Reilly's (1931) law of retail gravitation which states that "two centres attract trade from intermediate places approximately in direct proportion to the sizes of the centres and in inverse proportion to the square of the distances from these centres to the intermediate place." Thus, the trade area boundary between two centres, A and B, is, in miles from B, equal to :

$$\frac{\text{Miles between A and B}}{1 + \frac{\text{Size of A}}{\text{Size of B}}}$$

Berry (1967, 41) points out that in rural areas, where distance is a major determining factor, the breaking-point formula works quite well, but that in urban areas, where consumers have a number of centres of differing attractiveness within the maximum distances they are willing to travel, probability models work rather better.

Marketing theory (Alderson, 1957, 199) abandons the assumption that markets are homogeneous. It sees retail marketing as an economic process in which heterogeneous segments of demand are matched with heterogeneous segments of supply through a sorting process leading to conglomeration of two or more types of goods for the purpose of serving the needs of a particular individual or group. Thus, bread, milk, vegetables, cigarettes and confectionery are brought together in the corner store in accordance with some pattern determined by demand. Marketing theory sees both consumer and supplier as problem solvers - the consumer seeks to complete an assortment of goods, while the supplier seeks to find a market for his goods. Differential advantage, according to marketing theory, arises not so much out of cost as product differentiation and geographic location. This explains why supermarkets have been so successful and why they continue to increase in size as they strive to increase their range of goods. As Baumol and Ide (1956, 93-101) point out consumers do not know in advance whether they will be able to obtain what they want before entering a shop. The greater the variety of items carried by a shop, up to a point, the greater the consumer's reason for expecting that his shopping trip will be successful.

Economic theories and concepts are useful in analysing many aspects of consumer behaviour, but other aspects are explainable only in psychological terms. No single psychological theory of consumer behaviour is completely adequate. However, the psychologists' concept of 'needs', closely related to the economists' concept of 'demand', is of particular value in studying consumer behaviour. According to most psychologists 'needs' develop in the individual progressively during his lifetime according to his

own personal attributes and the cultural and socio-economic environment in which he lives. Complementary to the notion of 'need' is that of 'satisfaction'. It is widely accepted that the individual strives to maximize the satisfaction he seeks and to minimize the efforts he expends (Sauer, 1963, 360). In seeking to satisfy his needs the individual will act in a way that is 'adaptively or intendedly rational rather than omnisciently rational' (Wolpert, 1964, 558) and that in this way he will adapt to the environment or adapt the environment to satisfy his needs.

Of particular interest to the geographer is Maslow's (1954, 80-106) holistic-dynamic theory which speaks of five levels of needs arranged in hierarchical order (see Fig. 2.7). Those needs which have the greatest potency at any given time dominate behaviour and demand satisfaction. The individual feels 'driven' by a high-priority need. Throughout the development of these motivational patterns, the individual directs most of his activities toward frustrated needs rather than toward those that have already been satisfied. When a need is satisfied, a higher order motive or class of motives makes its appearance and demands satisfaction, and so on until "self-actualization" or "self fulfilment" has been attained.

The most basic level, in Maslow's theory, is what he calls the physiological needs, including hunger, thirst, sex and also the need for sleep, relaxation and bodily wellbeing. All these must be relatively well satisfied before the individual can begin to function at a higher level. When the physiological needs have been relatively well satisfied there emerges the need for 'safety', followed by the next higher order of motives, the need for 'affectionate relationships' with other people and the need to

find a place in some group. The fourth level in the hierarchy constitutes the need for 'esteem'. Satisfaction of the esteem needs generates feelings of worth, self-confidence, and adequacy. Finally, if all these needs are moderately well satisfied, the need for 'self-actualization' impels the individual to activity. In Maslow's words (1954, 91) 'a musician must make music, an artist must paint, a poet must write if he is ultimately to be at peace with himself. What a man can be he must be. This need we may call self-actualization'.

Most behaviour, Maslow claims, is multi-motivated. Theoretically it would be possible to analyse a single act of an individual, such as the purchase of some commodity, and see in it the expression of the individual's physiological needs, his safety needs, his love needs, his esteem needs and self-actualization needs. He admits, however, that not all behaviour is determined by these basic needs and that there are many determinants of behaviour other than motives. For instance, an important class of determinants is the so called external field where external stimuli, such as advertising, in association with ideas or certain conditioned reflexes result in activity. Average behaviour is determined both by needs of the individual and external stimuli. How one would determine in practice the degree to which any motive or external stimulus was instrumental in producing an act is far from clear since Maslow admits that 'unconscious motivations would on the whole be rather more important than conscious motivations', and warns that the overt act should not be attributed directly to a particular need but should be seen rather as a surface indicator or 'symptom' of more basic needs.

There is no reason to believe that just because needs exist the retail system will respond to those needs. Certainly, the potential will be there but unless the needs are matched with money no transaction will take place. The economists' "income--expenditure" model, which emphasizes the importance of money circulation as the means of generating trade adds refinement to our understanding of the retail system. By giving weight to each attribute of the "environment" of the system by assessing such factors as number of persons per household, rather than gross population, disposable income rather than gross income, and expected income rather than actual income, etc. the "income-expenditure" model contributes to a better appreciation of the energy flow in the system. Of particular interest is the concept of discretionary income. A family with money left after buying such necessities as food, clothing, shelter, and transportation, has discretionary income which it spends on durable goods, leisure-time pursuits etc. Even small fluctuations in income cause sharp repercussions in consumers' purchases of durables. As long as the CBD continues to be the primary source of durable goods it will benefit most by growth in real income. On the other hand, as soon as income levels are high enough to give those goods mass appeal there will be a tendency for them to be supplied by suburban retailers.

Maslow's theory that human behaviour is motivated by a hierarchy of 'needs', though less deterministic than the traditional economists' view of the 'economic man', is matched by the economists' concept of 'utility' as a determinant of demand (Chisholm, 1970, 138). A hungry man will expend appreciable effort to satisfy the need for food. He is likely to gain greater satisfaction

from the first unit consumed than from subsequent units. The utility of additional food will decline as his need for food is satisfied, and consumption of additional food may even become a disutility. A rational consumer will act in such a way as to satisfy his basic need, and any surplus in income he will spend in such a way as to gain greatest utility or satisfaction from his expenditure.

Any change in relative prices will alter the level of satisfaction obtained from a given pattern of expenditure and is therefore likely to induce an alteration in the quantities of goods purchased. Similarly, change in a consumer's income will affect his pattern of demand. The elasticity of demand for a commodity or group of commodities is affected by the proportion of the consumer's total income that is absorbed by the commodity in question. In the case of foodstuffs, demand is inelastic because the extent to which human beings can alter their intake of food is strictly limited by biological necessity, so that as income increases the proportion of total income spent on food will decrease. The relationship has been well documented on both the personal (Engel, 1857) and on the national level (Clark, 1960). Although the income-elasticity of food consumption may become negligible at high incomes, this may be less true of expenditure on food if an increasing proportion is spent on transport costs, preparation and processing and retail services, or perhaps on substitution of more expensive foodstuffs for less expensive foods. While the general trend is for food to be supplied increasingly in suburban locations there is, with increasing affluence, a tendency for atypical demands to be met by specialists located in the CBD.

The same kinds of relationship between income and consumption can be seen to operate in other commodity groups. As standards of living rise and the proportion of total income spent on food declines, so the proportion spent on other items will increase unless absorbed by savings or taxation. For the consumer clothing, housing and heating are the most important needs after food, and may be equated with Maslow's second level of need, that is, the need for 'safety' in which security, stability and predictability play an important role. Demand for these shows considerably more elasticity, and only in the most wealthy countries is there evidence that expenditure on these items may be approaching saturation point.

With increasing wealth, expenditure on clothing, housing and heating continues to grow even after the basic needs for these commodities have been satisfied. In Maslow's terms, the individual once relatively well satisfied at the 'safety' level is motivated at the next level in the hierarchy of needs. He is now motivated by the desire for warm and friendly human relationships and he seeks to belong to a wider group. At this level he is concerned with providing a warm and comfortable home in which to entertain friends, and this would be reflected in increased expenditure on furniture, alcoholic beverage and entertainment. Table 3.5 shows that between 1960-61 and 1970-71 these were among the fastest growing commodity groups in Hobart. Furthermore, most of these were supplied largely by the CBD, although there was evidence that these were being decentralized (Table 3.26).

Closely associated with this level of motivation is the next in which the individual seeks to satisfy needs for 'esteem', for independence and freedom, and for reputation and prestige.

At this level he seeks a bigger, more expensive house in a more exclusive neighbourhood, his clothes are chosen, not for warmth and comfort, but for fashion, and he seeks the independence of mobility provided by the private car. This trend towards increasing income-elasticity of demand at high income levels is accentuated by a more subtle effect of technical development in general, leading to increasing sophistication of goods (Chisholm, 1970, 147). Although demand for consumer goods such as refrigerators, radios, sewing machines and motor vehicles may reach saturation point, there is high income-elasticity of demand for refinements. At this level the consumer is no longer simply motivated by the need for personal mobility in the form of a private vehicle, but rather by the esteem to be had from possession of the latest and most exclusive model of car.

Thus the consumer proceeds from one level of 'need' to the next, gaining relatively little satisfaction from expenditure on those commodities that have come to be regarded as part of his normal way of life. At any moment in time he is most highly motivated by the newly emerged need until, finally, he reaches the highest level when self-actualization is achieved, at which stage, presumably the consumer is able to satisfy all his needs. For the individual consumer elasticity of demand will increase with increasing real income, and will be greatest when he has reached the level of self-actualization.

In general terms it would probably be true to say that the level of affluence in Hobart is such that the majority of consumers are motivated by higher level needs. There is comparatively little poverty, so that relatively few consumers would be motivated by physiological and safety needs alone, and the majority would be

motivated by the higher level need to 'belong to a group' for 'esteem' and for 'self-actualization'. Consumer trends would be towards increasing expenditure on homes and on the furnishings that contribute to a sense of security, comfort and esteem, on personal mobility, on the vast array of electrical gadgets, on leisure activities such as reading, sport and entertainment, and on minor personal requisites. Analysis of aggregate spending patterns confirms exactly this mode of consumer behaviour (Table 3.3).

While it is true that consumer behaviour patterns depend upon value judgements of individuals, sociologists would claim that the individual cannot be separated from the society in which he lives. Certainly, level of income is a major factor in determining the level at which individuals direct their efforts and it is also a major determinant of elasticity of demand, nevertheless, as Jonassen (1955) has shown, shoppers belonging to different age, sex, and socio-economic groups have markedly different orientation to CBD shopping, and Murdie (1965) has shown how cultural differences give rise to different consumer travel patterns within the same system of market centres.

Sociologists view consumer behaviour as the activity of groups, motivated by group pressures as well as by individual desires. The people with whom an individual regularly associates exert a strong influence on his behaviour. To be accepted, he must conform, at least to some extent, to the group's standards of behaviour. Sociologists see consumers as members of a stratified hierarchical society conforming closely to the expectations of the class to which they belong. Within each class is a small number of 'innovators' who tend to be atypical and isolated but who nevertheless may affect the behaviour of other group members by their

example. Among the others is another small group known as 'influentials', distinguished from the rest simply by who they are, what they know, and who they know. Influentials tend to resist change but are copied by the majority of the group and set the behaviour norms, and therefore, like the innovators, play a key role in determining consumer behaviour.

In Australia, Congalton (1963) distinguishes seven broad ranks according to occupational status, but it would be reasonable to say that, in broad terms, a threefold hierarchy exists. The upper class, though insignificant in terms of numbers, constitutes an atypical group which tends to favour CBD shopping. The middle class, because of rising standards of living, constitute the growing majority of Australians. They provide the mass market for standard brand goods and therefore encourage decentralization of retailing. Within the middle class one can distinguish upper and lower ranks, the members of which seek satisfactions that bring recognition and respect from others by fitting into the norms established by their group. The fact that each social group takes as its reference group the social class immediately above it helps to explain upward mobility or "social climbing". It also explains why the needs of the individual are never satisfied, and why affluent middle class Australia has an ever-growing trade in commodities that may be seen as status symbols.

By the second half of the twentieth century social sorting appears to have left the Australian lower class motivated more by the need for job security, retirement benefits and leisuretime pursuits than by the middle class values of success. Consequently, lower class families have less discretionary income at their disposal and therefore tend to be influenced more by price and travel

costs than do middle class families. In Hobart, in spite of the Tasmanian government's policy to encourage decentralization of lower class families from the inner city, there are still many in the older more densely populated parts of Hobart who satisfy virtually all their needs in the CBD.

B.b. The Principle of Least Effort

The concept of least effort runs through the history of natural science variously as the 'law of minimum effort' or the 'principle of least action'. It reappears in systems analysis as the concept of 'minimum potential energy' and in the social sciences as the 'principle of least effort'. Lösch (1939, 184), one of the greatest economic locational theorists, draws attention to the significant similarity between this 'law' of nature which states that natural events reach their goals by the shortest route and what he has termed a 'principle' of human behaviour based on reason: the 'principle of simplest means or least resistance' which, he claims, embraces the behaviour of some men in all situations, and the behaviour of almost all men in some situations. Zipf (1949, 3) claims that the entire behaviour of the individual is at all times motivated by the urge to minimize effort and that their movements 'will always tend to be governed by one single primary principle ... the Principle of Least Effort'. This means that a person, in solving his immediate probable future problems, as estimated by himself, will strive to minimize the probable average rate of his work-expenditure over time, and in so doing will be minimizing his effort.

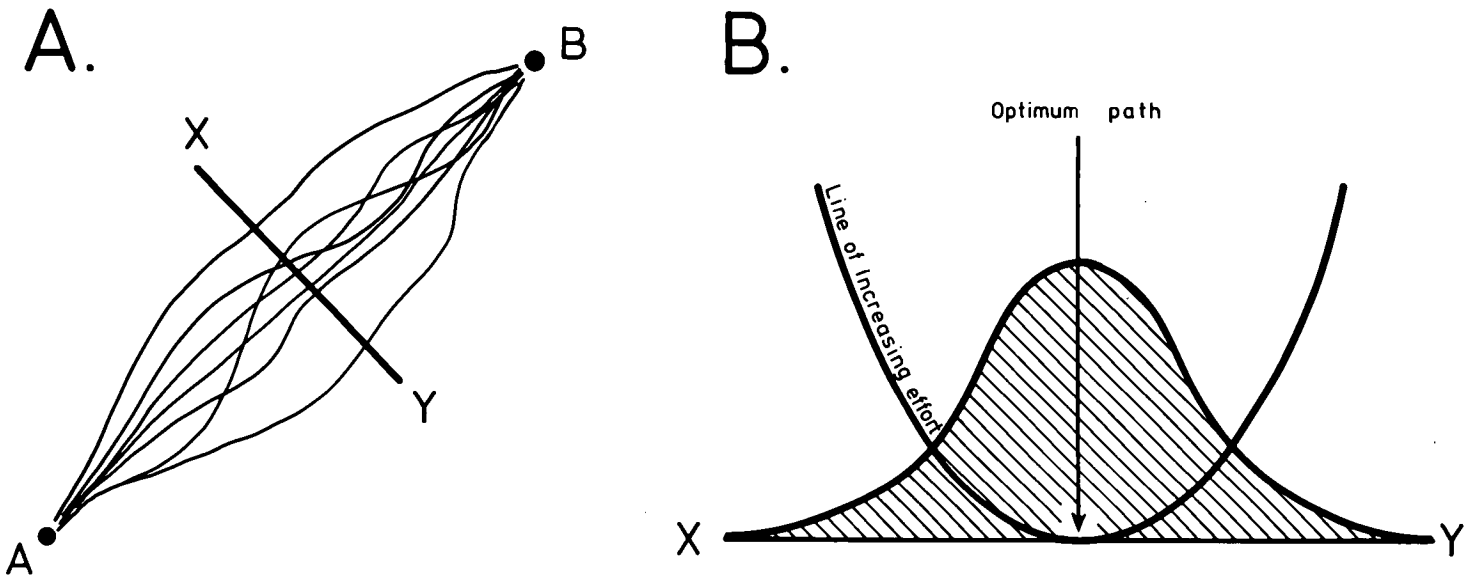
Ideally, from the individual consumer's viewpoint, all his needs should be supplied by shops, carrying the entire range of goods, situated at or in close proximity to his place of residence so as to minimize the distance that would need to be travelled, and

therefore also the time and effort that would need to be expended in satisfying those needs. While it might be possible to satisfy the ideal for a small number of consumers the cost of providing a comparable service for all consumers would be prohibitive, so that a compromise must be reached in which the location of shops will be such that the total effort of all individuals in the market area will be minimized. In an isolated market area with one shopping centre only, with uniformly distributed consumers, and with uniformly good transport facilities in all directions the least-effort solution to the location of the sole shopping centre would be in the centre of the market area.

In this idealized market the least-effort path between consumers at point A and a shopping centre at point B, shown by the broken line in Fig. B.b.1.a, is a straight line representing the shortest, quickest and easiest route. Haggett (1965, 32) argues that the actual paths are likely to diverge from the optimum path, in distance terms, for a wide range of rational and irrational reasons. Examples of actual paths are shown by bundles of lines from A to B. A cross-section drawn from X to Y across the shortest route shows that as consumers diverge further from the optimum path the amount of work they have to do, in distance travelled, goes up. This is plotted as a parabolic line in Fig. B.b.1.b. Haggett suggests that the actual paths will tend to fluctuate about the optimum in a random way to give a Gaussian distribution about the least-effort path (the shaded normal curve in Figure B.b.1.b).

The consumer living in an urban environment will have a choice of centres from which to make his purchase. In practice we may expect him to shop at the nearest establishment that he regards as likely to satisfy his need, for, according to the principle of

Optimum paths between centres viewed in terms of probability theory.



(After Hagget, 1965, 33)

Figure B.b.1

least effort, he will try to satisfy his need with the least possible movement since it takes work to move masses over distance. Zipf (1949, 386) has presented empirical evidence which shows that there is a general fall-off of movement with distance, and Lösch (1939, 37) has shown that consumption is a function of distance. Isard (1956, 55-76) in an examination of the currently available empirical material and observations on the space economy, including the work of Stewart (1947) connected with the study of social physics, and the work of human ecologists McKenzie (1933), Bogue (1949) and Hawley (1950) shows that there is a general fall-off of movement with distance so illustrating the least effort principle. He reaches the conclusion that 'it is undeniable that the friction of distance manifests itself in a number of important ways and markedly conditions the structure and functioning of critical sectors of the social system', and that the impact of transport is crucial.

The dramatic changes that have taken place in transport technology have had a significant effect upon urban commercial structure. The point is rapidly approaching when all but a few consumers in Tasmania will have the use of a private motor vehicle for shopping. Not only has the advent of the private motor vehicle provided the consumer with a much greater degree of freedom of choice of shopping centre, but it has also provided the retailer with greater freedom of choice of his location. In all instances the principle of least effort will be seen to be at work in these locational decisions.

B.c. <u>The Effect of Learning Upon Spatial Decisions</u>

Colledge and Brown (1967) show how spatial decisions and movements, of the sort involved in consumer behaviour, which appear to have large random components in the initial periods of trial and

error, often appear to become more stereotyped and predictable as the result of learning. Their explanation assumes that when a consumer moves to a new town she knows very little about the shopping opportunities of the area, that during the search for the best shopping facilities learning is involved, and that this may be described in the form of a probability or transition matrix. Suppose that the consumer is faced with the problem of buying groceries from one of three supermarkets, A, the nearest, B, a member of a chain of supermarkets known to our consumer and, C, the most distant. Our consumer's shopping behaviour may be described by the transition matrix:

		STATES AT THE NEXT TIME PERIOD		
	SUPERMARKET	A	B	C
STATES AT THE FIRST TIME PERIOD	A	.75	.20	.05
	B	.47	.41	.12
	C	.51	.34	.15

Suppose that the first shopping trip is to supermarket B. We may describe this situation with the state vector:

SUPERMARKET A	SUPERMARKET B	SUPERMARKET C
(0	1	0)

where the 1 indicates that the consumer is shopping at supermarket B. The transition from one supermarket to another is described by the probability matrix:

TRANSITION MATRIX

State Vector t_o

$$(0\ 1\ 0) \cdot \begin{pmatrix} .75 & .20 & .05 \\ .47 & .41 & .12 \\ .51 & .34 & .15 \end{pmatrix}$$

State Vector t_1

(.47 .41 .12)

State Vector t_2

(.61 .30 .09)

State Vector t_3

(.64 .28 .08)

State Vector t_4

(.65 .27 .08)

State Vector t_5

(.66 .27 .08)

Then at time t_1 there is a 47 percent chance that our consumer will buy her groceries at supermarket A, a 41 percent chance of her still patronizing supermarket B, and a 12 percent chance of her patronizing supermarket C. We might expect such a state vector during an early stage of her search for the most satisfactory solution to her shopping problem for, while she has some knowledge of supermarket B's products, supermarket A is closer to home, and there is only a small probability that she will visit supermarket C since it is most distant.

If we continue the multiplication process with the transition matrix the probabilities within the state vector shift so that, by the fifth step, probabilities converge upon the final state vector:

SUPERMARKET A	SUPERMARKET B	SUPERMARKET C
(.66	.27	.08)

indicating that our consumer is likely to choose the closest supermarket about two-thirds of the time, the next most accessible about 27 percent of the time, and the most distant only about 8 percent of the time. Thus, we may expect our consumer's behaviour to

settle down into a stereotyped and reasonably predictable pattern.

In reality the probability matrix is unlikely to remain stable but will change with the searching and learning experiences of the consumer. The 'law of effect', formulated originally by Thorndike, which maintains that behaviour which is rewarded will tend to repeat itself while behaviour that is not rewarded will tend to drop away (Rice, 1965, 252), will play a major part in shaping the consumer's behaviour pattern. In appreciation of this fact the competing supermarkets will do their best to reinforce the consumer's spatial behaviour by providing the basic facilities, such as parking, customers' trolleys and air conditioning, plus other widely advertised advantages including special discount offers and prizes.

BIBLIOGRAPHY

A.B.S. (Australian Bureau of Statistics) was the title assumed by the C.B.C.S. (Commonwealth Bureau of Census and Statistics) on 2nd January, 1974.

A.B.S. (1974a) Tasmanian Year Book No. 8: 1974, Hobart.

A.B.S. (1974b). Economic Censuses: 1968-69 - Retail Establishments and Selected Service Establishments (Final Bulletin): Part 1 - Details of Operations by Industry Class - Victoria, Melbourne.

A.B.S. (1974c). Economic Censuses: 1968-69 - Retail Establishments and Selected Service Establishments. Industry and Commodity Details for Statistical Retail Areas: Victoria, Melbourne.

A.B.S. (1974d). Economic Censuses: 1968-69 - Retail Establishments and Selected Service Establishments - Details of Operations by Industry Class - Queensland, Brisbane.

A.B.S. (1974e). Economic Censuses: 1968-69 - Retail Establishments and Selected Service Establishments. Industry and Commodity Details for Statistical Retail Areas, Queensland, Brisbane.

A.B.S. (1974f). Economic Censuses: 1968-69 - Retail Establishments and Selected Service Establishments - Details of Operations by Industry - South Australia, Adelaide.

A.B.S. (1974g). Economic Censuses: 1968-69 - Retail Establishments and Selected Service Establishments. Industry and Commodity Details for Statistical Retail Areas: South Australia, Adelaide.

A.B.S. (1974h). Economic Censuses: 1968-69 - Retail Establishments and Selected Service Establishments. Industry and Commodity Details for Statistical Retail Areas: Western Australia, Perth.

ABIODUN, J.O. (1967. Urban Hierarchy in a Developing Country, Economic Geography, XLIII, No.4, October, 1967, 347-67.

ABLER, R., ADAMS, J.S. and GOULD, P. (1971). Spatial Organization: The Geographer's View of the World, Englewood Cliffs, N.J.

ADAMS, J.S. (1970). Residential Structure of Midwestern Cities, Annals of the Association of American Geographers, LX, 1970.

ALDERSON, W. (1957). Marketing Behavior and Executive Action. Homewood, Ill.

ALLPASS, J., AGERARD, E., HARVEST, J., OLSEN, P.A. and SHOTT, S. (1967). Urban Centres and Changes in the Centre Structure in Brill, E.J., Urban Core and Inner City, Leiden.

ANDREWS, J. (1973). The Retail Trade Area of Coles New World Supermarket, Glenorchy. Unpublished paper, Geography Department, Tasmanian College of Advanced Education, Hobart.

APPLEBAUM, W. and COHEN, S.B. (1961). The Dynamics of Store Trading Areas and Equilibrium, Annals of the Association of American Geographers, 51, 73-101.

ARONOFF, J. (1967). Psychological Needs and Cultural Systems, Princeton, N.J.

BAUMOL, W.J. and IDE, E.A. (1956). Variety in Retailing, Management Science, 3, 93-101, 1956.

BEED, T.W. (1961). An interpretation of recent trends in the geographical distribution of retail sales in Sydney, Geographical Society of New South Wales, Research Paper No. 1, Sydney.

BEED, T.W. (1963). Retail Centralisation and Decentralisation in Sydney, Geographical Society of New South Wales, Research Paper 3, 95-118.

BEED, T.W. (1965). Location Strategy of Retail Firms in Sydney, Paper Presented to the Fourth Meeting of the Institute of Australian Geographers, Newcastle, N.S.W., February, 1965.

BERRY, B.J.L.(1963). Commercial Structure and Commercial Blight, University of Chicago, Department of Geography, Research Paper No. 85, Chicago.

BERRY, B.J.L. (1965). Commercial Structure, Chicago.

BERRY, B.J.L. (1967). Geography of Market Centres and Retail Distribution, Englewood Cliffs, N.J.

BERRY, B.J.L. and GARRISON, W.L. (1958). Recent Developments of Central Place Theory, Papers of the Regional Science Association, IV (1958), 107-20.

BERRY, B.J.L. and MARBLE, D.F. (edo). (1968). Spatial Analysis, Englewood Cliffs, N.J.

BLUMENFELD, H. (1964). The Urban Pattern, Annals of the American Academy of Political and Social Sciences, CCCLII, 74-83.

BOGUE, D.J. (1949). The Structure of the Metropolitan Community, University of Michigan, Ann Arbor. Cited in Isard, W. (1956). Location and Space-Economy, Cambridge, Massachusetts.

BOULDING, K.E. (1956). "Toward a General Theory of Growth" in Spangler, J.J. and Duncan, O.D., (Eds) Population Theory and Policy, New York.

BOYCE, R.R. and CLARK, W.A.V. (1963). Selected Spatial Variables and Central Business District Retail Sales, Papers and Proceedings of the Regional Science Association, 11, 1963, 167-193.

BRIGGS, D.H. and SMYTH, R.L. (1965). Economics of Scale and Grocery Prices in Western Australia. Economic Record, 41, 248-253.

BRILL, E.J. (1967). Urban Core and Inner City, Proceedings of the International Study Week 11-17 September, 1966, University of Amsterdam Sociographical Department, Leiden.

BRUNHES, J. (1920). Human Geography, (English edition: London). Cited in Harvey, D. (1969). Explanation in Geography, London.

BURTON, H. (1954). The City Fights Back, New York.

BRUSH, J.E. (1953). The Hierarchy of Central Places in Southwestern Wisconsin, The Geographical Review, XLIII, 1953, 380-402.

BRUSH, J.E. and BRACEY, H.E. (1955). Rural Service Centres in Southwestern Wisconsin and Southern England, The Geographical Review, 45, No.4, 1955, 559-69.

C.B.C.S. (Commonwealth Bureau of Census and Statistics) became Australian Bureau of Statistics (A.B.S.) on 2nd January, 1974.

C.B.C.S. (1964.a). Census of Retail Establishments and Other Services - Year Ended 30th June, 1962. Bulletin No. 2 - New South Wales, Canberra.

C.B.C.S. (1964.b). Census of Retail Establishments and Other Services - Year Ended 30th June, 1962. Bulletin No. 3 - Victoria, Canberra.

C.B.C.S. (1964.c). Census of Retail Establishments and Other Services - Year Ended 30th June, 1962. Bulletin No. 4 - Queensland, Canberra.

C.B.C.S. (1964.d). Census of Retail Establishments and Other Services - Year Ended 30th June, 1962. Bulletin No. 5 - South Australia, Canberra.

C.B.C.S. (1964.e). Census of Retail Establishments and Other Services - Year Ended 30th June, 1962. Bulletin No. 6 - Western Australia, Canberra.

C.B.C.S. (1964.f). Census of Retail Establishments and Other Services Year Ended 30th June, 1962. Bulletin No. 7 - Tasmania, Canberra.

C.B.C.S. (1967). Tasmanian Year Book, No. 1, 1967, Commonwealth Bureau of Census and Statistics, Hobart.

C.B.C.S. (1968). Tasmanian Year Book No. 2, 1968, Commonwealth Bureau of of Census and Statistics, Hobart.

C.B.C.S. (1969). Australian Standard Industrial Classification (Preliminary Edition), Canberra.

C.B.C.S. (1970.a). Tasmanian Year Book No. 4: 1970, Hobart.

C.B.C.S. (1970.b). Labour Report No. 54: 1968 and 1969, Canberra.

C.B.C.S. (1971.a). Statistics of Tasmania Demography, 1971, Commonwealth Bureau of Census and Statistics, Hobart.

C.B.C.S. (1971.b). Statistics of Tasmania. Labour, Wages and Prices, 1970-71, Commonwealth Bureau of Census and Statistics, Hobart.

C.B.C.S. (1972.a). Official Year Book of the Commonwealth of Australia: 1972, No. 58, Canberra.

C.B.C.S. (1972.b). Tasmanian Year Book No. 6: 1972, Hobart.

C.B.C.S. (1973.a). Tasmanian Year Book No. 7: 1973, Hobart.

C.B.C.S. (1973.b). Economic Censuses: 1968-69, Retail Establishments and Selected Service Establishments, Australia (Final Bulletin) Part 1 - Details of Operations by Industry Class, Canberra.

C.B.C.S. (1973.c). Economic Censuses, 1968-69: Retail and Selected Service Establishments (Final Bulletin) Part 1. Details of Operations: Tasmania, Hobart.

C.B.C.S. (1973.d). Economic Censuses, 1968-69: Retail and Selected Service Establishments (Final Bulletin) Part 2. Industry and Commodity Details for Statistical Retail Areas: Tasmania, Hobart.

C.B.C.S. (1973.e). Economic Censuses: 1968-69 - Retail Establishments and Selected Service Establishments - Details of Operations by Industry Class and Area - Western Australia, Commonwealth Bureau of Census and Statistics, Perth.

C.B.C.S. (1973.f). Economic Censuses, 1968-69: Retail Establishments and Selected Service Establishments - Detailed Statistics of Operations - New South Wales, Sydney.

C.B.C.S. (1973.g). Demography: 1969 and 1970, Bulletin No. 86, Commonwealth Bureau of Census and Statistics, Canberra.

C.B.C.S. (1973.h). Field count lists of collectors districts in local government areas in Hobart Statistical Division for the Census of 1971, Hobart.

CARTER, H. (1972). The Study of Urban Geography, London.

CHASE, C.I. (1967). Elementary Statistical Procedures, New York.

CHISHOLM, M. (1970). Geography and Economics, London.

CHRISTALLER, W. (1966). Central Places in Southern Germany, Englewood Cliffs, New Jersey. (Translated by C.W. Baskin from the German original published in 1933)

CLARK, C.G. (1960). The Conditions of Economis Progress, 3rd edition.

COHEN, S.B. and LEWIS, G. (1967). Form and Function in the Geography of Retailing, Economic Geography, 43, No. 1, 1-42.

COLES, G.J. and Co. Ltd., (1974). Chain Stores, Yesterday and Today, Public relations and promotions brochure, Melbourne.

COMMISSIONER OF TAXATION. (1963). Taxation Statistics 1961/62: Supplement to the 42nd Report to Parliament of the Commissioner of Taxation, 1st October, 1963, Canberra, p. 99-100.

COMMISSIONER OF TAXATION. (1973). Taxation Statistics 1971/72: Supplement to the 51st Report to Parliament of the Commissioner of Taxation, 1st September, 1973, Canberra.

CONGALTON, A.A. (1963. Occupational Status in Australia, University of New South Wales, School of Sociology, Sydney.

CORNIÈRE, P. (1967). Studies on Town Centres in France, in Brill, E.J. Urban Core and Inner City, Leiden.

COURTNEY, T.D. (1973). Consumer Behaviour Survey: Hobart CBD. Unpublished data.

COURTNEY, T.D. (1974.a). Survey of Supermarkets - Hobart: 1974.

COURTNEY, T.D. (1974.b). Survey of Regional Shopping Centres - Hobart: 1974.

CRAIG, C. (1944). Early Town Planning in Hobart, Royal Society of Tasmanian Papers, 1944, 99-108.

CUNDIFF, E.W. and STILL, R.R. (1971). Basic Marketing: Concepts, Decisions, and Strategies, Englewood Cliffs, N.J.

CUTFORTH, G. (1974). The K Mart, Hobart. 1974: A Geographical Study, Unpublished thesis, Geography Department, Tasmanian College of Advanced Education, Hobart.

DALY, M. and BROWN, J. (1964). Urban Settlement in Central Western New South Wales, Geography Department of University of Sydney and Geographical Society of New South Wales, Research Paper No. 8, 1964, Sydney. Cited in Fairbairn K.J. and May, A.D. (1971). Geography of Central Places: A Review and Appraisal, Sydney.

DARLOW, C. (ed.), (1972). Enclosed Shopping Centres, London.

DEPARTMENT OF LABOUR AND INDUSTRY (1969). List of Registered Shops as at 1st September, 1969 in Accordance with the Factories, Shops and Offices Act, 1965, Hobart.

DEPARTMENT OF PUBLIC WORKS, (1970). Hobart Transportation Revision - 1970, Hobart.

DEPARTMENT OF PUBLIC WORKS, (1965). The Tasman Bridge - Hobart, Hobart.

DEPARTMENT OF PUBLIC WORKS (1970), Hobart Transportation Revision 1970, Hobart.

DEPARTMENT OF TOWN AND COUNTRY PLANNING, University of Manchester, (1964). Regional Shopping Centres in North West England, Manchester.

DEPARTMENT OF TOWN AND COUNTRY PLANNING, University of Manchester, (1966). Regional Shopping Centres in North West England - Part Two: A Retail Shopping Model, Manchester.

DICKINSON, R.E. (1951). The West European City, London.

DUNCAN, D.J. (1965). Shopping Centre, Encyclopaedia Britanica, Vol. 20, 575-576, Chicago.

EDWARDS, M. (1974). Location and Distribution of Corner Stores in West Moonah, Hobart. Unpublished paper, Geography Department, Tasmanian College of Advanced Education, Hobart.

ENGEL, E. (1857). Die Productions und Consumptionsverhaltnisse des Konigreichs Sachsen. Cited in Yeates, M.H. (1968). An Introduction to Quantitative Analysis in Economic Geography, N.Y. p.150.

FAIRBAIRN, K.J. (1968). Victorian Towns as Service Centres, unpublished Ph.D. thesis, University of Melbourne. Cited in Fairbairn, K.J. and May, A.D. (1971). Geography of Central Places: A Review and Appraisal, Sydney.

FARMER, R.S.J. (1965). Population, in Davies, J.L. (ed.), Atlas of Tasmania, Hobart.

FIBER, A. (1972). Retail Management, London.

FREE, J.L. (1970). Accessibility and Retail Land-Use Structure in the Core of the CBD, Unpublished thesis submitted for B.A. Honours, University of Tasmania.

FULOP, C. (1968). Retailing and the Consumer, London.

GARNER, B. (1967). Models of Urban Geography and Settlement Location in Chorley, R.J. and Haggett, P. (eds), Socio-Economic Models in Geography, London, 303-360.

GETIS, A. and GETIS, J. (1972). Some Current Concepts, Techniques, and Recent Findings in Urban Geography, Journal of Geography, LXXI, No. 8,

GOTTMAN, J. (1972). Urban Centrality and the interweaving of quarternary activities. Cited in Bell, G. and Tyrwhitt, J. Human Identity in the Urban Environment, London.

GRANT, J. McB. (1973). Current Trends in the Tasmanian Economy, in What is Tasmania's Future: A Symposium, Edwards, J.K., Grant, J.McB., Gray, R.T., and Scott, P., University of Tasmania, Hobart.

GREGORY, S. (1963). Statistical Methods and the Geographer, London.

HAGGETT, P. (1965). Locational Analysis in Human Geography, London.

HARTENSTEIN, W. and STAACK, G. (1967). Land Use in the Urban Core, in Brill, E.J. (1967), Urban Core and Inner City, Leiden.

HARVEY, D.W. (1966). Theoretical concepts and the analysis of land use patterns, Annals of the Association of American Geographers, 56, 361-74.

HARVEY, D. (1969). Explanation in Geography, London.

HAWLEY, A.H. (1950). Human Ecology, New York. Cited in Isard, W. (1956). Location and Space-Economy, Cambridge, Massachusetts.

HEINEMEYER, W.F. (1967). The Urban Core as a Centre of Attraction, in Brill, C.J., Urban Core and Inner City, Leiden.

HOBART CITY COUNCIL (1968). City of Hobart Report on Land Use Survey: Central Business District - 1967-1968, Hobart.

HOBART CITY COUNCIL (1970). City of Hobart Report on Land Use Survey: Central Business District - 1367-1968 - (Revised Tables, 1970) Hobart.

HOBART CITY ENGINEER'S DEPARTMENT, (1971). City of Hobart Parking Updating Study, 1971, Hobart.

HOEL, P.G. (1960). Elementary Statistics, New York.

HOLTON, R.H. (1960). Scale, Specialization and Costs in Retailing, School of Business, University of California, Berkeley, 1960. Cited in Berry, B.J.L. (1963), Commercial Structure and Commercial Blight, University of Chicago, Department of Geography, Research Paper No. 85, Chicago.

HOTELLING, H. (1929). Stability in Competition, Economic Journal. Cited in Lösch, A. (1939) The Economics of Location.

HOYT, H. (1958). Classification and Significant Characteristics of Shopping Centres, Appraisal Journal, April, 1958. Cited by Vance, J.E. Jr., (1962) Emerging Patterns of Commercial Structure in American Cities in Proceedings of the I.G.U. Symposium on Urban Geography, Lund Studies in Geography, Series B, No. 24.

HOYT, H. (1961). Sales in Leading Shopping Centres and Shopping Districts in the United States, Urban Land, September 1961.

HULL, C.L. (1943) The Principles of Behaviour, New York.

HULL, C.L. (1952). A Behaviour System.

HUNTSBERGER, D.V. and BILLINGSLEY, P. (1973). Elements of Statistical Inference (Third Edition), Boston.

ILLERIS, S. (1967). Funktionelle Regioner i Danmark Omkring 1960, Geografisk Tidsskrift, LXVI (1967), 225-51. Cited in Berry, J.L. and Horton, F.E.(1970), Geographic Perspectives on Urban Systems, Englewood Cliffs, New Jersey.

ISARD, W. (1956). Location and Space-Economy, Cambridge, Massachusetts.

ISARD, W. (1969). General Theory - Social, Political, Economic and Regional with Particular Reference to Decision Making Analysis, Cambridge, Mass.

JOHNSTON, R.J. (1965). Sales in Australian Central Business Areas: 1956-57 - 1961-62, The Australian Geographer, Vol. 9, No. 6, Sept. 1965, 380-381.

JOHNSTON, R.J. (1966). The Distribution of an Intra-Metropolitan Central Place Hierarchy, Australian Geographical Studies, 4, No. 1, 1966, 19-33.

JOHNSTON, R.J. and RIMMER, P.J. (1967). The Competitive Position of a Planned Shopping Centre, The Australian Geographer, 10, 160-168.

JOHNSTON, R.J. and RIMMER, P.J. (1969). Retailing in Melbourne, Research School of Pacific Studies, Department of Human Geography, Publication HG/3 (1969), Australian National University, Canberra.

JONASSEN, C.T. (1955). The Shopping Centre Versus Downtown, Columbia, Ohio.

KING, L.J. (1969). Statistical Analysis in Geography, Englewood Cliffs, N.J.

LLOYD, P. and DICKEN, P. (1972). Location in Space: A theoretical approach to economic geography, New York.

LÖSCH, A. (1954 [39]). The Economics of Location, Translated by Woglom, W.H. and Stolper, W.F. (1954), New Haven.

MACQUARIE, L. (1811). Government and General Orders, Dec. 1, 1811, Historical Records of Australia, Series III, Vol. I, 512.

MASLOW, A.H. (1954). Motivation and Personality, N.Y.

McDOUGALL, W. (1908). An Introduction to Social Psychology, Boston.

McKENZIE, R.D. (1933). The Metropolitan Community, New York. Cited in Isard, W. (1956). Location and Space-Economy, Cambridge, Massachusetts.

MORONY, M.J. (1951). Facts from Figures, Harmondsworth.

MURDIE, R.A. (1965). Cultural differences in consumer travel. Economic Geography, 41, 211.

MURPHY, R.E. and VANCE, J.E. (1954). Delimiting the CBD, Economic Geography, 30, 1954, 189-222.

NATIONAL CASH REGISTER COMPANY (1971). Index of Shopping Centres (1957-1971), Sydney.

NELSON, R.L. (1958). The Selection of Retail Locations, New York.

NUNLEY, R.E. (1971). Living Maps of the Field Plotter: Analog Simulation of Selected Geographic Phenomena, Commission on College Geography Technical Paper No. 4, Association of American Geographers, Washington.

PARKER, H.R. (1968). The Changing Role of Department Stores, Town Planning Review, 39, 55-64.

PEARCE, D. (1974). Hobart Retail Hierarchy - 1969. Unpublished paper, Geography Department, Tasmanian College of Advanced Education, Hobart.

PETERS, R.S. (1958). The Concept of Motivation, London.

REILLY, W.J. (1931). The Law of Retail Gravitation, New York. Cited in Berry, B.J.L. (1967). Geography of Market Centres and Retail Distribution, Englewood Cliffs.

RICE, P.B. (1965). 'The Ego and the Law of Effect' in Stacey, C.L. and De Martino, M.F. (eds), Understanding Human Motivation, N.Y.

ROSE, A.J. (1966). Dissent from Down Under: Metropolitan Primacy as the normal State, Pacific Viewpoint, 7, 1-27.

ROTHENBERG, J. (1967). 'Elimination of blight and slums', in Stewart, M. (ed.)(1972). The City: Problems of Planning, Harmondsworth.

RUTHERFORD, J., LOGAN, J.I. and MISSEN, G. (1966). New Viewpoints in Economic Geography, Sydney.

SAUER, C.O. (1963). Land and Life (edited by Leighley, J.B.), Berkeley. Cited in Harvey, D. (1969) Explanation in Geography, London.

SCOTT, P. (1955). Hobart: An Emergent City, Australian Geographer, 6, 19-31.

SCOTT, P. (1957). The Changing Population of Tasmania, Geographical Studies, Vol. IV, No. 1, 11-27.

SCOTT, P. (1959). 'The Australian CBD', Economic Geography, 35, 290-314.

SCOTT, P. (1964). The Hierarchy of Central Places in Tasmania, The Australian Geographer, 9, No. 3, 1964, 134-47.

SCOTT, P. (1965). The Population Structure of Australian Cities, The Geographical Journal, 131, Part 4, 463-478.

SCOTT, P. (1968). Patterns of land use and population distribution, Background Paper 2 H.R.H. The Duke of Edinburgh's Third Commonwealth Study Conference. Australia 1968.

SCOTT, P. (1970). Geography and Retailing, London.

SIEGEL, S. (1956). Nonparametric Statistics for the Behavioural Sciences, New York.

SIMMONS, J.W. (1964). The Changing Pattern of Retail Location, University of Chicago, Department of Geography, Research Paper 92, Chicago.

SIMMONS, J.W. (1964). The Changing Pattern of Retail.

SKINNER, B.F. (1953). Science and Human Behaviour.

SKINNER, G.W. (1964). Marketing and Social Structure in Rural China, Journal of Asian Studies, 34, November, 1964.

SMAILES, P.J. (1969). Some Aspects of the South Australian Urban System, The Australian Geographer, XI, 1969, 29-51.

SMITH, WILBUR and ASSOCIATES, (1964). Hobart Area Transportation Study Report, Volume I, New Haven, Conn.

SMITH, WILBUR and ASSOCIATES, (1965). Parking, City of Hobart, 1965-1975, Vol. I., New Haven, Conn.

SOLOMON, R.J. (1968). The evolution of Hobart, a study in historical geography with special reference to urban fabric and function, circa 1804-1963, unpublished thesis, Geography Department, University of Tasmania, Hobart.

SOLOMON, R.J. (1972). Tasmania, Sydney.

SPRENT, James (circa 1841). Survey of Hobart's Streets and Buildings, unpublished volume held by Lands Department, Hobart.

STEWART, J.Q. (1947). Empirical Mathematical Rules Concerning the Distribution and Equilibrium of Population, Geographical Review, Vol. XXXVII (July 1947), 461-85.

TAEUBER, A.F. (1963). "Population Redistribution and the Central Business District", in Burgess, E.W. and Bogue, D.J. (eds.) Research Contributions to Urban Sociology, Chicago.

THOMPSON, D.L. (1966). Future directions in retail area research. Economic Geography, 42.

TOYNE, P. and NEWBY, P. (1971). Techniques in Human Geography, London.

URBAN LAND INSTITUTE (1957). Shopping Centers Re-studied, Technical Bulletin No. 30, Urban Land Institute, Washington, D.C. Cited in Cundiff, E.W. and Still, R.R. (1971). Basic Marketing, Englewood Cliffs, N.J.

VANCE, J.E. Jr., (1962) Emerging Patterns of Commercial Structure in American Cities in Proceedings of the I.G.U. Symposium on Urban Geography, Lund Studies in Geography, Series B, No. 24.

VENEKAMP, P.E. and KRUIJT, B. (1967). Structure, Spread and Development of the Retail Trade in the Inner City of Amsterdam, in Brill, E.J., Urban Core and Inner City, Leiden.

WALKER, J.B. (1950). Early Tasmania (Papers 1888-1899), The Royal Society, Hobart.

WATSON, J.B. (1919). Psychology from the Standpoint of a Behaviourist.

WINSBOROUGH, H.H. (1956). "Comparative Studies of Urban Population Densities", in Spengler, J.J. and Duncan, O.D. (Eds), New York.

WOLPERT, J. (1964). The decision process in spatial context, Annals of the Association of American Geographers, 54, 537-58. Cited in Harvey, D. (1969). Explanation in Geography, London.

YEATES, M.H. (1968). An Introduction to Quantitative Analysis in Economic Geography, New York.

YEATES, M. (1974). An Introduction to Quantitative Analysis in Human Geography, New York.

ZIPF, G.K. (1949). Human Behaviour and the Principle of Least Effort, An Introduction to Human Ecology, Cambridge, Massachusetts.

ZIPFINGER, F.J. (1963). Rosny Regional Shopping Centre: A Report to Perpetual Insurance and Securities Ltd., Sydney.